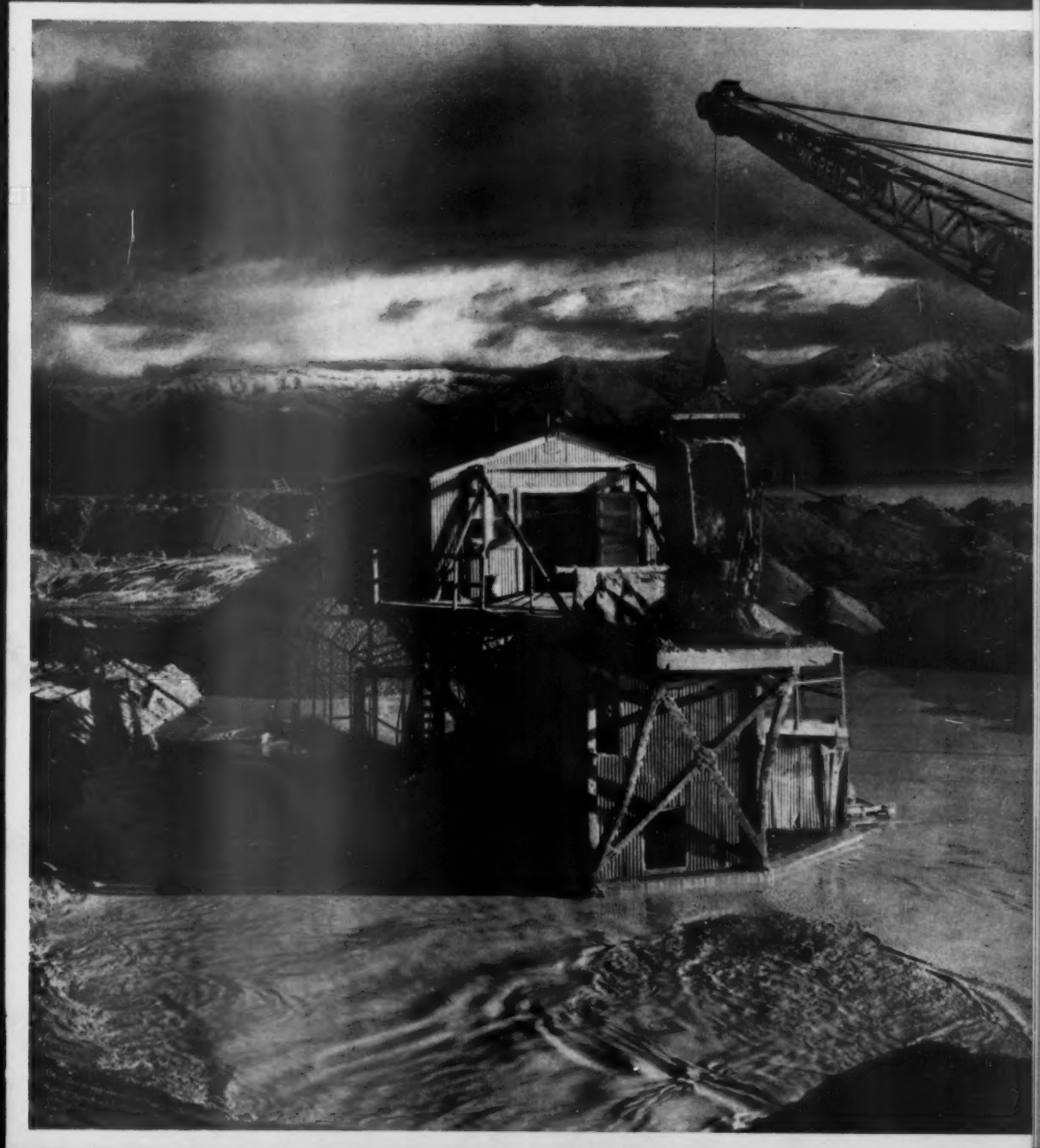
# MINING CONGRESS JOURNAL



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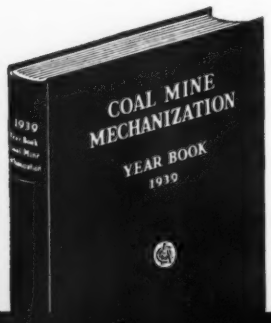


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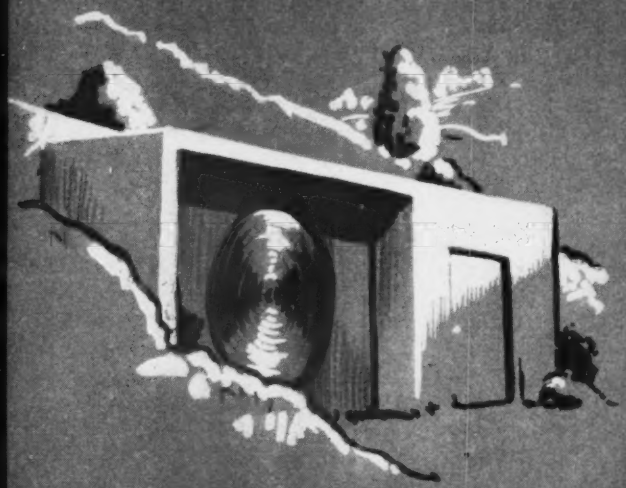

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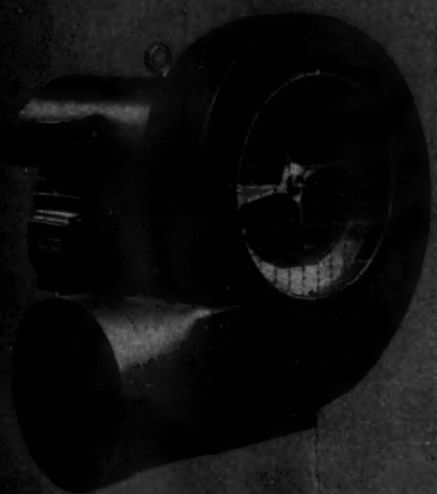

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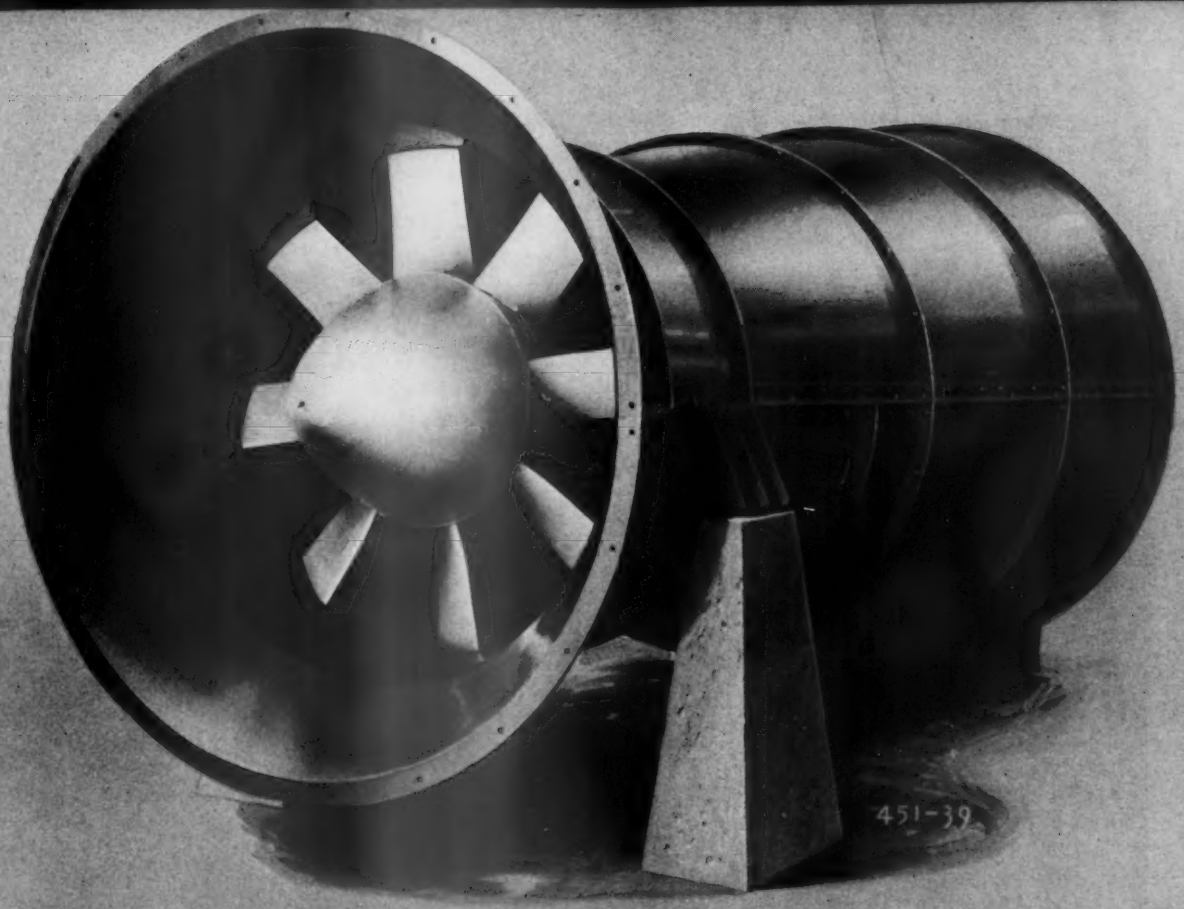


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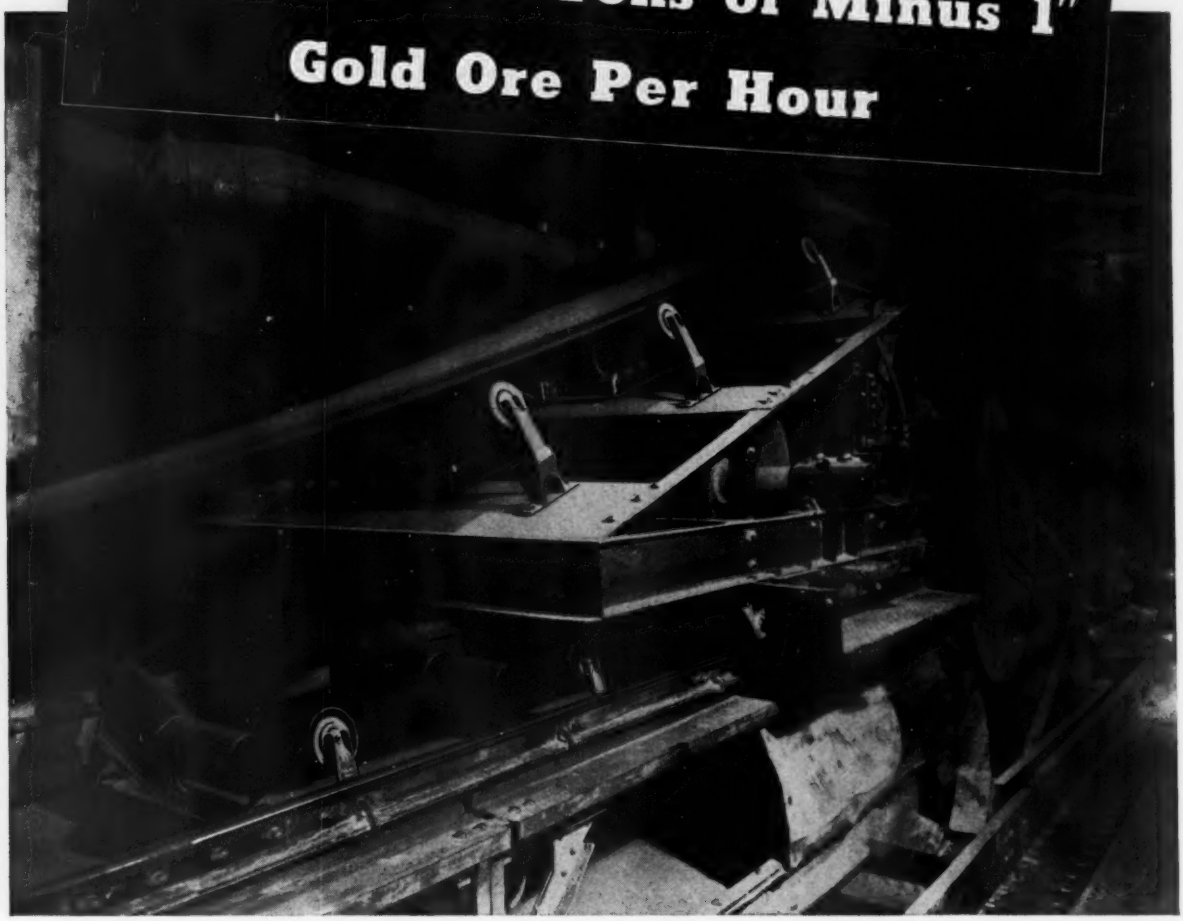

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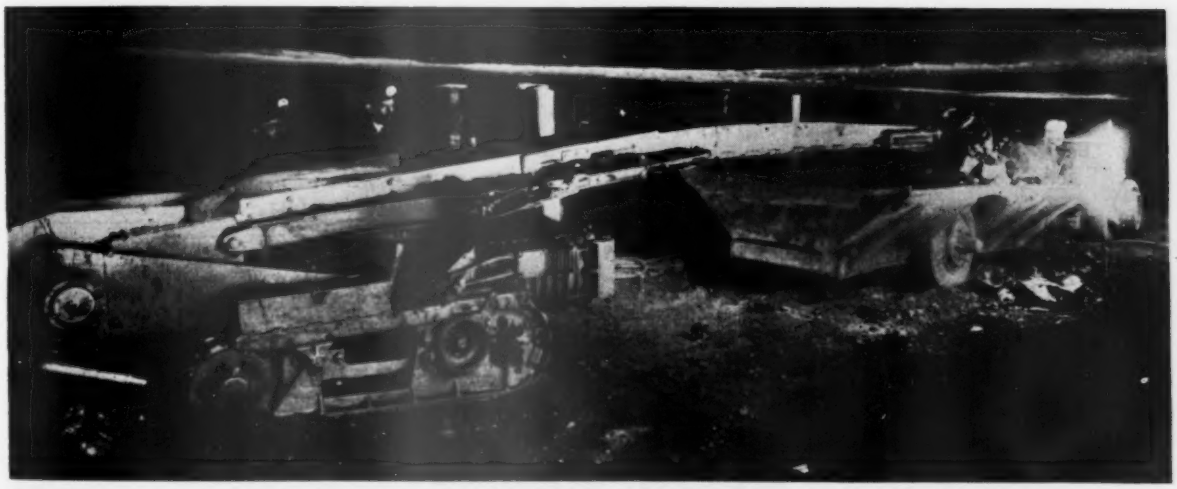

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MINING CONGRESS JOURNAL

Vol. 25 SEPTEMBER, 1939 No. 9

A complete account of the highly successful Metal Mining Convention and Exposition of the American Mining Congress, Western Division, held August 28-31 in Salt Lake City, is carried on pages 28 to 46 of this issue.

A large part of this space is devoted to excerpts of addresses presented there on vital problems facing the industry. These will be published in full in early issues of Mining Congress Journal.

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COVER: Combination dragline dredge (so-called "doodlebug" outfit) mining placer ground near Beowawe, Nev.—*Photo by Caterpillar Tractor Co.*

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*Opinions expressed by authors within these pages are their own, and do not necessarily represent those of the American Mining Congress*

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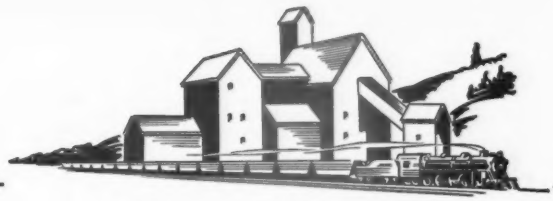

# Why Wealth Accumulates

THE great contest between labor and capital, which has been almost continuous throughout world history, has taken place because of a belief that capital was receiving more than its just share of the joint earnings of labor and capital. The colossal fortunes which have been accumulated seem to indicate that labor has not had its share of the proceeds.

The earnings of capital, theoretically at least, are always cumulative, while the earnings of labor are continuously consumed. The moment that the wage earner begins to deposit his surplus earnings in a savings account he becomes a capitalist. The moment he makes an investment in a home or any other property he becomes a capitalist. Capital accumulates, while wages are either immediately consumed or are invested, thus assuming a place as a part of stored-up capital.

It must be recognized that all wages must come from the earnings of industry or else from stored-up capital. When taken from stored-up capital business is unprofitable, and losses force a discontinuance of operations and a discontinuance of employment. Just how long wages can remain in excess of the earnings of industry is a problem which can only be determined by the amount of capital involved in the enterprise. The greater the capital involved in what is known as a going business, the more of wages not truly earned can be paid. Sooner or later, however, with business continuing unprofitable, wages and proper capital charges in excess of earnings will wreck the industry.

Every agitation for increased wages and shortened hours, if the writer's information is even approximately correct, is fraught with danger to labor. Labor is entitled to a good living, if the industry in which it is employed is earning enough profit to pay the higher wages and the increased taxes.

Present indications are that the burdens of increased wages, of increased taxes, of shorter hours and lack of executive control already in effect are more than industry can carry at this time, and that because of these hindrances capital is not making new investments. Therefore, the number of unemployed is not being decreased by the starting of new enterprises which would absorb this excess labor.

We are meeting the situation by increasing the tax burdens, by decreasing the business executive's control and by insisting that labor shall receive more than the business which employs it can hope to earn.

The earnings of employing capital are largely determined by domestic markets which are being threatened by foreign imports over continuously weakened tariff barriers.

We are putting into effect a division of wealth and, by this token, a destruction of the agencies which make for employment. Capitalism is the basis of profitable production and employment. If destroyed, socialism or communism will take its place. Control of business by a central government, at its best, is socialism, and at its worst is either dictatorship or chaos.

The great contest between labor and capital should settle its differences by arbitration and not by war or threats of war; not by strikes and boycotts, but by composition and fair dealing; not by force, but by justice which gives proper recognition to human rights—the personal rights of liberty and property.

J. F. Calvert



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# A MESSAGE TO THE MINING INDUSTRY

D. C. JACKLING

*The following message by D. C. Jackling, President of the Utah Copper Company and Nevada Consolidated Copper Corporation, to his thousands of mining friends on the occasion of the annual banquet of the 6th Annual Metal Mining Convention and Exposition at Salt Lake City, which he was unable to attend owing to illness, is of such unusual interest and value to the entire mineral industry that we take keen pleasure in reproducing it as a guest editorial.*

To the President, Directors, Officers and Members,
American Mining Congress:

You have already received through Mr. Moffat my expressions of disappointment and regret that unforeseen occurrences have rendered it impossible for me to have the pleasure of meeting with you on this occasion of your Annual Western Convention now in session at Salt Lake City.

I had been looking forward eagerly to this opportunity to pronounce in person some of the deep-seated convictions I hold with respect to the fundamental importance of the mineral industries in world-wide economics and the province and achievements of the American Mining Congress in its promotion and conservation of the best interests of these industries in their basic and vital relationships to all industry.

My views represent the sum of cumulative experiences throughout well nigh half a century, during which I have had an active part in the development and advancement of the mineral industries involving most all of their important branches. Since the turn of the present century, I have come to recognize with ever-increasing seriousness the value of service rendered by the American Mining Congress to these vast natural resource industries, more particularly so with respect to the public relationships of these industries along with those of all other industry.

The existence of the mineral industries and their contributions to the economic and social advancement of mankind throughout the ages of civilization have become so familiar to most of us that they are all too likely to be taken as matters of course without much thought of the

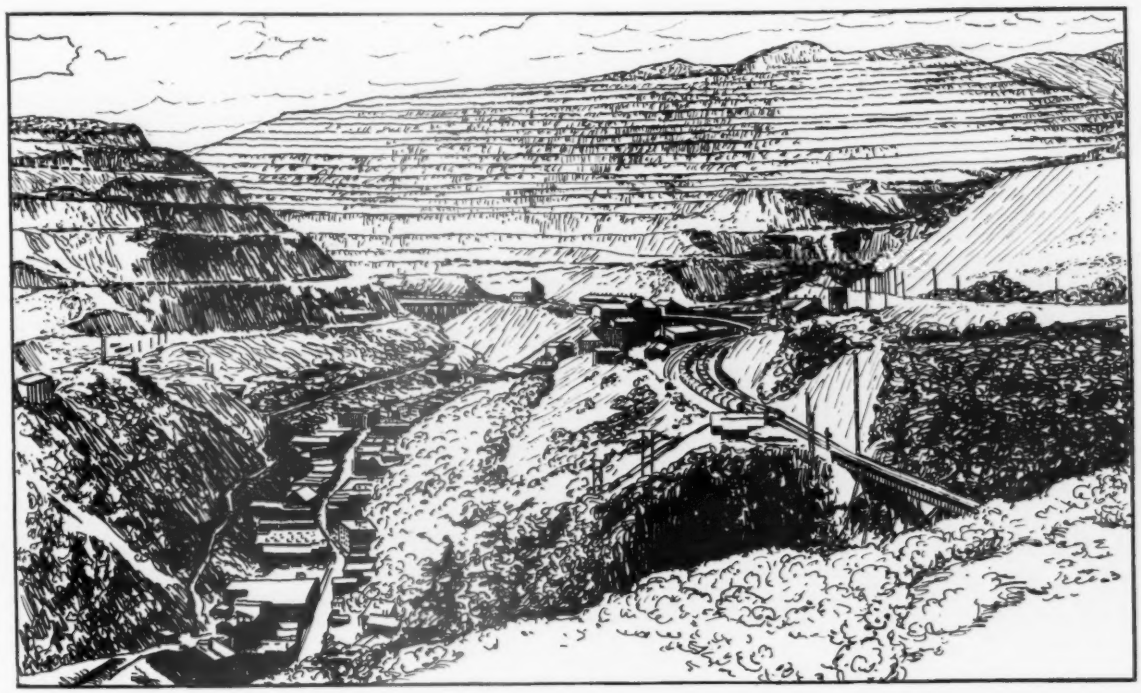
long and hazardous ways of trial and error, of good fortune and bad, over which they have proceeded to their present day position of magnificent stature.

Always throughout the history of mankind the mineral resources of the earth have provided him with the first implements of progress. This is true as to appliances with which to till the soil, first fashioned from wood by the use of tools made of stone, and later by crude instruments wrought from metals found as such in their native state. Always the tools employed in the advancement of agriculture have been of mineral origin, and so have been the utensils used in reducing agricultural products to a physical state suitable for employment as human food. Thus, the mineral industries have blazed the way for all human progress, and it follows that without the pioneer miner and artificer of minerals and metals there could have been no measurable advancement towards the present day order of economic and social regime; so, when we stop to think of what would be the human situation of today without the contributions the mineral industries have made towards the progress of civilization, we realize at once that there could have been no advancement at all. Accordingly, it seems only fair that those of past and present days who have devoted their energies, their resources and their lives to the upbuilding of mineral industry should have at least equal prominence with any others in the commendation of all elements of society who have benefited in similar degree with those actually engaged in mining industry, broadly speaking.

To my notion, the position of the Mining Congress in the mineral industries of this country should be accorded no less acclaim than that deserved by other leading institutions or organizations engaged in the actual production of minerals and the refined elements derived from them. To state the matter concisely, mankind could not have progressed so far without the products of mineral industries to serve as the basic groundwork for his endeavors in every and all directions. In the same way it appears that the Mining Congress has come to play such an important part in the mineral industries and their relationships with other industries and with the public at large that the mining fraternity could not very well get along without the Mining Congress.

It is gratifying indeed that the spontaneous enthusiasm which I am told is being displayed here by those representative of the mineral industries both great and small in their continued support of the Mining Congress and its work affords ample evidence that the miner brotherhood would not care to experiment in the direction of doing without the American Mining Congress.

May the Congress and its competent organization long endure and continue its matchless service to the most fundamentally indispensable of all human walks of endeavor.



Air view of the Capitol and the Mall

# The 76th Congress and the Mining Industry*

● ***Review of National Legislation Affecting Mining Shows More Constructive Attitude on the Part of Congress on Important Issues***

By JULIAN D. CONOVER
Secretary
American Mining Congress

ANY man who has the welfare of the mining industry at heart, and who knows something of the glorious history of mining in Montana,* must perforce feel deeply gratified to have an opportunity to meet with the leaders of that industry—men who are carrying forward its honored traditions and are meeting the complex problems of today with the same spirit of resourcefulness and determination as their predecessors displayed at Alder Gulch, Last Chance and Silver Bow 75 years ago. It was the mining industry that was primarily responsible for the building of the great state of Montana from a frontier wilderness—the mining industry which caused the thin bands of steel of transcontinental railroads to reach out into the empire of the Northwest, which built mills and smelters, towns and cities, from which many thousands of men have gained employment in the production of new wealth, and which today, after three-quarters of a century, is still the leading industry of this commonwealth.

On the Great Seal of Montana, as adopted by the first territorial legislature in 1865, we find in the foreground a miner's pick and shovel, and around the circumference the motto "Oro y Plata"—gold and silver—in fitting recognition of the part which metals and minerals were destined to play in the State's development and in its contributions to our national wealth. Since that date the total mineral production of Montana has been nearly three and one-half billions of dollars. Most of the proceeds have gone into payrolls, the purchase of supplies, the building of homes and public structures, the creation of markets for products of the farm and the range; they have constituted the life blood of business and commerce, and have supported many times the number of persons actually employed in mining itself. The value of mining to this state can scarcely be overestimated.

These facts are no doubt well known to every man here today, and I cite them merely to emphasize the importance of this state-wide gathering, and the sincerity of the greeting which I bring you from your fellow mining men throughout the nation. We all realize today the necessity for strong organizations of mining men in defense of their common interests, and we are especially glad that the Mining Association of Montana has made such fine progress in the five years since it was organized, as evidenced by your record in the State Capitol and by the wonderful meeting which you are having today.

In the early days, mining did not have many of the troubles which beset it today. When adventurous men first came into these mountains in quest of Ophir, the legendary source of precious metal, and when mining camps were said to consist of "Ophir-holes, gopher-holes and loafer-holes," their problems were comparatively simple. There was no complicated system of tax laws on a "heads-you-lose, tails-the-government-wins" basis, no arbitrary Wage-Hour or Labor Relations Acts, no Securities and Exchange Act, nor any of the other hundred and one taxes, laws, regulations and questionnaires which nowadays take so much of the operator's time and energy that he has virtually none left for developing his mine and meeting his payroll. Yet even then, when there was too little rather than too much law, voluntary organizations for mutual protection were found needful, and in this state the Vigilantes did yeoman service in

* Presented to Annual Meeting, Mining Association of Montana, Bozeman, Mont., Aug. 18, 1939.

ridding the mining regions of murderers and road agents.

### Need of Organized Effort in Meeting Common Problems

Today, fortunately, we no longer need that type of organization, yet today more than ever before mining men need the strength of organized effort in meeting their common problems. The maze of new laws, regulations, restrictions, and government controls, the heavy taxes and the many forms in which they are applied, create new difficulties which the pioneers were not called upon to solve, and call for strong, militant organizations, to insure that the needs of the mining industry are understood and that its further development is not ham-strung by ill-conceived or ill-advised acts of our state and federal governments.

May I say at this point that the work of your own association, under the capable and aggressive leadership of your president, Mr. Carl Trauerman, is well known not only in the State of Montana but throughout the other mining states and in our national capital. You are doing an intelligent, high-class job in seeing that your state officials understand mining's problems and that the industry is given a square deal, bearing a just but not an undue share of the burdens of government. You are well represented in regional and national meetings of mining men, and your cooperation with the American Mining Congress, as the national organization of the entire mining industry, is of the greatest value in our efforts to prevent crippling or destructive legislation and to advance the interests of mining at the nation's capital.

The mining industry is not, as sometimes supposed, made up merely of a few large mines owned by corporations with great capital resources. It is composed also of hundreds, yes thousands, of small mining operations which are struggling to make a profit, to give employment, and to develop some day into larger producers. It is these mines which are in many ways the real backbone of the industry, and which, I understand, constitute a majority of the membership of your association, as they do of the American Mining Congress. They realize that the voice of the individual is weak, but that when thousands are banded together in a common cause their united voice has a compelling force. In 1937 the U. S. Bureau of Mines reported 1,021 producing metal mines in the State of Montana, and a total of 9,361 such mines in the western states. Obviously, the great majority of these are small mines, but their problems, whether their payrolls be little or big, should receive sympathetic consideration in the determination of government policies. If the whole mining industry, in this state and throughout the country, will just keep together and let everyone know that it is organized, uninformed legislators and government officials will surely think twice before they take a pot shot at it.

### Compliments Western Congressmen

I have been asked to talk about national legislation which affects mining. At the outset I should like to pay a well-deserved compliment to the Representatives and Senators in Congress from our western states, and specifically from your own State of Montana. These men have tried faithfully to represent your viewpoint in national affairs, and have done effective work in promoting the welfare of the mining industry. The members of your own delegation, Senator Wheeler, Senator Murray, Representative O'Connor and Representative Thorkelson, are outstanding men in the Congress of the United States.

This brings up something else which should be said very plainly and emphatically. These able men, whom you have sent to Washington as your representatives, need and welcome your continued help in the problems which come before them. The number of matters which require attention daily from a member of the House or Senate is almost inconceivable. He cannot possibly be familiar with all your problems, nor understand how various proposed laws will affect you, unless he is given the facts. You owe it to him and to the mining industry to keep him advised, so that he may act intelligently in your behalf. I can assure you from personal experience that your representatives welcome information as to the legitimate requirements of mining; they find that those who come from non-mining states have all too meager a knowledge of our problems, and they need all the ammunition they can get in fighting our battles.

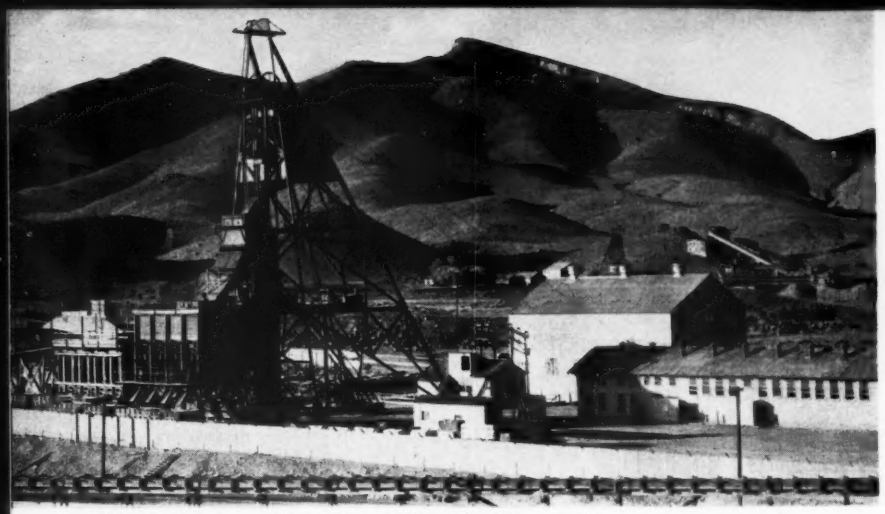
The mining industry was deeply interested in many issues which came before this last session of Congress. I shall not try to discuss these in detail, but will try merely to give the highlights on some of the more important. These naturally include:

Silver and monetary legislation
Strategic minerals
Taxation
The Wage-Hour Law
Amendment of the Wagner Act
Federal inspection of mines
Public land policies
Moratorium on assessment work
Stream pollution legislation
Reciprocal trade agreements
SEC regulations

### Action on Silver

I know you are particularly interested in the action taken on silver, which means so much to the entire western mining industry. As you know, the special monetary powers of the President, as contained in the Gold Reserve Act of 1934, expired on June 30 of this year. These included (1) the power to fix by proclamation the coinage price for domestically mined silver, (2) the power to

Surface plant at the Sunshine mine in the Coeur d'Alene Dry Belt



Phelps Dodge Corporation's mines at Bisbee have been leading copper producers for many decades

further decrease the gold content of the dollar, from 59.06 cents to 50 cents, and (3) use of the $2,000,000,000 stabilization fund with which the Treasury maintains the foreign exchange value of the dollar. It was under this authority that the President had continued the coinage of domestic silver at 64.64 cents an ounce up to June 30, beyond which date all was uncertain.

During the first six months of the 76th Congress, a bill to renew these powers ran the gauntlet of extensive hearings, bitter debates and much parliamentary maneuvering. A group of western Senators headed by Senator Key Pittman of Nevada, Chairman of the Senate Special Silver Committee, strove to obtain official assurance that if these powers were continued, the price of domestic silver would be fixed at not less than 77.57 cents an ounce, but the Treasury refused to make any such commitment. The bill passed the House and finally came out on the Senate floor just before the June 30 deadline. Here, in one of the most unusual combinations in the entire history of silver legislation, western Senators joined with those opposing the President's continued power over the gold dollar, and that coalition did three things: It struck out the dollar devaluation authority; it took from the President his discretionary power over the price of domestic silver and wrote in a statutory price of 77.57 cents per ounce for all silver mined from domestic deposits subsequent to July 1, and it adopted an amendment by Senator Townsend of Delaware prohibiting any further purchases of foreign silver under the Silver Purchase Act of 1934.

In the conference between the Senate and the House, the power to devalue the gold dollar was restored, and the amendment prohibiting purchases of foreign silver was eliminated, in accordance with the urgent desires of the Treasury and State Departments; but the fixing of a statutory coinage price for all silver mined from domestic deposits was retained, the final rate being set at 71.11 cents per ounce, and this agreement was ultimately accepted by both Houses and signed by the President.

This action and the Pittman Act of 1918 have correctly been termed the most important enactments affecting silver since 1873, when the white metal was demonetized. The 1939 Act, for the first time in 66 years, officially remonetizes silver—not by Presidential proclamation and not for a limited period of time, as in the past five and one-half years, but by the law of the land itself, which endures for all future time unless and until Congress itself sees fit to change this policy, or to revise the price of domestic silver upward or downward. Under this law the Mints must receive all domestically mined silver at the monetary rate of $1.29 an ounce, less a seigniorage charge of 45 percent, resulting in a net return to the producer of 71.11 cents. Such a stabilization by law of the domestic silver price is of incalculable value to the mines of the West. Not only does it provide a higher return to the miner, but, even more important, it gives a fixed basis upon which to plan development and expansion of operations, in place of the uncertainty of a price fixed by executive order and subject to revision or complete withdrawal without notice.

### Prohibition of Transfer Tax Assessment

There is one provision in this law which has not received much attention, but which is of paramount importance to every silver producer. This is the clause which prohibits the Treasury from assessing any "transfer tax" on silver so delivered to the United States Mints. I might explain that immediately after the bill had passed the Senate, the Treasury pointed out that silver delivered to the Mints under its terms would, in the opinion of its counsel, be liable to a 50 percent transfer tax under the Silver Purchase Act, and that such tax would be assessed on the difference between the world price (of approximately 35 cents) and the statutory price. This would have reduced the amount received by the miner to approximately 55 cents, and would have completely defeated the intent of those sponsoring the legislation. Whether the Treasury would have been justified under the law in deducting this tax is an open question, but it might have required years to litigate the matter, and in the meanwhile the miners would not have received the price intended by Congress. Fortunately, when this situation came up, we were able to prepare a complete memorandum on the subject, which we presented to Senator Pittman and other western Senators, and which they were able to use with good effect in insisting on specific language in the conference report which would eliminate this dangerous possibility.

### Old Price Extended Through July 1

After the bill passed, there was another serious complication affecting hundreds of small producers of the western states. The new law applies only to silver mined subsequent to July 1—that is, on July 2 or later. However, there was a lot of silver in ores and concentrates (we estimated it at two million ounces) which was mined before that date but had not been turned into the Mints under the old proclamation. Unless the assays had been completed, and all the affidavits and instruments of transfer accepted by the Treasury by June 30, this silver was not eligible for coinage at the old 64.64 cent price, and of course it could not be received under the new law. Many of the larger producers had been able to clear all their silver before the deadline, but this was impossible for the smaller mines and those in the isolated sections. Again, we discussed this with the Treasury and with western Senators and Congressmen, who went to bat promptly in the endeavor to remove this discrimination, with the result that on July 25 there was a further proclamation giving all silver mined before July 2 equal benefit of

the 64.64 cent price, by extending the date for delivery to the Mints until December 31 of this year.

### Plan to Avoid Further Gold Accumulation

So much for silver. What of gold, the other metal whose name lends luster to the great seal of this State? With the unsettled conditions abroad, world stocks have continued to pour into this country, until we now have over $16,000,000,000 of gold, computed at the present $35.00 price, buried in the Treasury's vaults. Meanwhile, it has been made a Federal offense for any citizen to possess gold coin or gold in any form. Shades of the pioneers who tilted a poke of dust on the bar! For five long years the first real money of the frontier country has now been made contraband, and the new generation coming up in the business world has had no practical knowledge or experience with gold and its time-honored functions. Small wonder that serious men are asking the question, how long can gold retain its accustomed status? What is the possibility that our country, with two-thirds of the world's gold reserve, will be left "holding the sack" if world demand and the use of gold as money should dwindle and disappear? What of the gold miner if such a condition should come to pass?

Early this year, as a first step toward meeting some of these problems, the American Mining Congress suggested a plan which would enable the Treasury to avoid further accumulation of gold and at the same time maintain the existing price. Two simple steps were suggested: First, reestablishment of the right to own gold coin or gold bars; second, payment by the Treasury for additional gold purchases, when desired, in $10.00 or $20.00 gold pieces, or in gold certificates redeemable in gold coin.

This plan appealed to members of Congress who realize the importance of maintaining a currency system closely related to a metallic base, and bills to effectuate it were introduced by Senator King of Utah and Congressman Case of South Dakota. The attitude of the Treasury, however, has been one of apathy or of opposition, due to its feeling that the issuance of gold coins is inconsistent with the power which it still possesses, to again change the gold content of the dollar. Nevertheless, it is noteworthy that Marriner Eccles, Chairman of the Federal Reserve Board, recently stated before a Congressional Committee that there was no reason why gold coin and gold certificates should not circulate freely.

We do not feel that the plan suggested would solve all of our monetary troubles, but we do urge appropriate steps to preserve the age-old appreciation of "hard money," and to minimize the growing possibility that gold ultimately may cease to be the foundation of money systems and become a mere commodity.

### Strategic Minerals

Montana, with its wide range of mineralization, is also deeply interested in legislation dealing with the so-called strategic minerals which are so vital to our national defense.

Knowing that our country is deficient in production of some of these minerals, Congress this year authorized the expenditure of $100,000,000 over a four-year period to purchase adequate stockpiles against a time of national emergency. Minerals to be purchased under this Act will probably include manganese, chromite, tin, tungsten, antimony, quicksilver and other metals. For the first year, only $10,000,000 has been appropriated, in order that domestic producers may be given a better opportunity to develop production and to share in these purchases. At the same time Congress has authorized the expenditure of $500,000 annually by the U. S. Bureau of Mines and the U. S. Geological Survey in searching for, developing and determining suitable metallurgical treatment for domestic deposits of strategic minerals. We understand that some of the first work under this program will be devoted to manganese and chromite deposits here in Montana.

### Constructive Changes in Revenue Act

A subject of first importance to mining at almost every session of Congress is taxation. Eight of the past nine years have witnessed substantial changes in our Federal tax laws, until the small mine operator in the mountains of the West has become utterly confused as to his tax liabilities. The intricacies of Federal taxes as they affect the special problems of mining have always been one of the chief concerns of the American Mining Congress, and particularly so in these last eight years.

Recently the tide seems to have turned somewhat, and for the past year we are glad to be able to report a number of constructive changes which were finally embodied in the Revenue Act of 1939.

First, the iniquitous tax on undistributed earnings was finally stricken from the statute books. Originally enacted in 1936 over vigorous protests from the mining industry, it was not until they made out their next tax returns that many mining taxpayers realized the strangling effect of this law on mining enterprise and development. By levying a special tax for failure to distribute all earnings to the shareholders, it placed a tremendous penalty on the sound, traditional practice of using current earnings to carry on development work, to purchase needed equipment, or to pay off indebtedness—a practice under which small mines throughout this country have repeatedly been built into larger producers and employers of labor. With the increased protest which then arose from mining and other industries similarly affected, pressure for revision of this tax mounted, until it was drastically reduced in 1938, and finally was completely eliminated this year.

Second, for the first time since 1934, losses incurred in one year may be carried forward and deducted from profits of a subsequent year before income tax is computed. This is of special importance to mining because of the wide fluctuations in annual earnings; and the right to carry losses forward for two years, as now provided, will place our industry on a far more equitable basis as compared with those industries whose markets and earnings are relatively stable.

Third, further leeway is provided in declaring the value of a mining company's stock against which the capital stock tax is assessed. The principle of permitting the operator to make a new declaration of value at periodic intervals was first recognized in the 1938 act, due to the efforts of Senators from mining states, and was further liberalized this year. It is particularly important to mining, where a lean mine today may be a bonanza tomorrow, or vice versa.

Fourth, the capital gains and losses provisions were liberalized, thus helping to free some of the "frozen" investment capital which is so much needed if new mining properties are to be developed.

Fifth, the "last-in, first-out" method of treating inventories, first recognized through our efforts in 1938, was put into workable form. This is of par-



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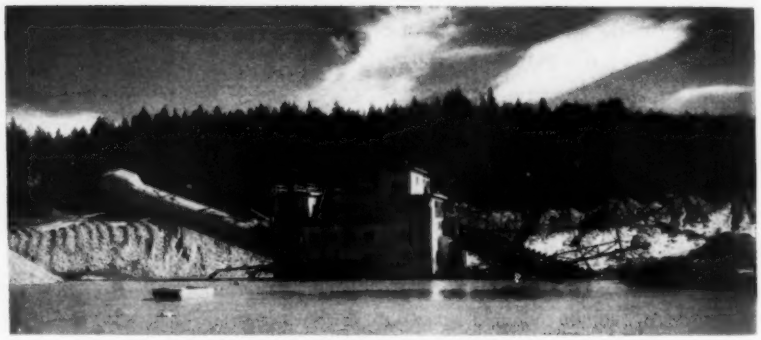
ticular importance to smelters of non-ferrous metallic ores, and to mines which ship their ores to such smelters.

Sixth, the existing depletion provisions of the law were maintained unchanged. These provisions, which recognize the distinctive character of mines as wasting assets, in which the miner's capital is actually consumed with each ton of ore or pound of metal which he extracts, are of cardinal importance to our industry. The percentage method of computing depletion, in effect since 1932, was designed primarily to give the small operator, who cannot engage elaborate engineering, legal and accounting assistance, the benefit of an adequate deduction from his taxable income to allow for the depletion of his ore body, and to prevent an income tax upon that portion of his net proceeds which is actually a return of his capital.

This provision has been under repeated attack, from members of Congress and from the Treasury, the latest and most severe such attack having been made two years ago in a special message to Congress from the White House. At that time we immediately communicated the facts at issue to mining men and associations throughout the country, and distributed many thousands of copies of a pamphlet explaining the justice of the present depletion provisions and their vital necessity to the welfare of the mining industry. This attack was successfully warded off, but there are indications that it may again be renewed in the coming session of Congress, and if so we shall again need the cooperation of all of you whose interests are so deeply involved. These pamphlets explain the subject in simple words, and we shall be very glad if you will take copies and see that the importance of percentage depletion and your personal need of it are made plain to your Congressional delegation.

### Wage-Hour Act Amendment Stymied

On October 24 of this year the National Wage-Hour Act will have been in effect one full year, and by its terms the maximum work-week permitted by law without payment of overtime will be reduced from 44 to 42 hours. As you probably know, this act was aimed primarily at some of the "sweat shop" industries of the more eastern states; its sponsors had little conception of the realities of an industry such as mining, and their endeavor to blanket all industry throughout the length and breadth of the land under a single idealistic formula has caused real hardship to thousands of small mine operators and mine workmen. With the minimum wages of this law, we are not directly concerned; mining has always paid good wages, adjusted to the price of its product and to the possibilities of profitable operation. But with the maximum-hour provisions we have been very much concerned. We know that it is not feasible to work a half shift in mining operations, and for practical purposes, therefore, the law makes it impossible to work more than a five-day week without payment of burdensome if not prohibitive overtime.



Yuba No. 134 dredging for gold 35 feet below water in Montana

The shorter week imposed by the Wage-Hour Act has meant such severe reduction in miners' earnings that Senator McCarran of Nevada and Senator Wheeler of your own state made eloquent protest against it on the floor of the Senate early last winter. They pointed out that the worst sufferers are the mine workmen in the smaller and more isolated mining camps, who are forced by the law to sit around idle two days out of the week, away from their families, with nothing to do and high priced board to pay, instead of being permitted to work straight through and earn enough so that they may take time away from the job for a week or so when it will really mean something to them.

Administrator Elmer Andrews, who is an able man trying to do a difficult job, suggested to the 76th Congress a number of minor amendments to the Act, relating principally to administration. The Labor Committee tried to push such a bill through the lower house under a closed rule which would not permit further amendments, but there was such widespread dissatisfaction with other features of the Act that they failed in this attempt. Meanwhile members of the House from mining states gave careful study to our industry's needs and called Administrator Andrews into conference.

Following this, Congressman Ramspeck of Georgia introduced a bill carrying a specific amendment to give relief to the metal mining industry, by permitting a 56-hour workweek in the mining and milling of non-ferrous metallic ores and operations incidental thereto. Finally, near the end of the session, a further hearing was held by the Labor Committee, at which the much publicized personal attack upon Vice President Garner by John L. Lewis took place, and following this the Labor Committee itself incorporated in its bill the 56-hour provision for metal mining, to apply to those localities "which by reason of high altitude, remoteness from established settlements, climatic conditions, or otherwise, are relatively difficult of access." All of these bills were reported to the House in the closing days of the session, but because of the heated controversial situation, no action was taken, and amendment of the Wage-Hour Act will go over until next year.

### 30 States Refused Wage-Hour Legislation

Possibly the sentiment of the country on the present Wage-Hour Act is best attested by the record of 30 of our state legislatures which convened this past year. Following passage of the national law, Miss Frances Perkins, the Secretary of Labor, placed great stress on the desirability of similar laws in each state, to supplement the federal act and assist in enforcement. Her department proceeded to draw up a so-called model state law which was "syndicated" to each of the state legislatures this last winter. Although such a law was introduced in 30 states, it failed of enactment in every one.

In the West, not only Montana but Arizona, California, Colorado, Idaho, Oklahoma, Utah, Washington and Wyoming turned down flat this attempt of the Department of Labor to run their affairs and to make them sub-agents for a law which is so ill-adapted to conditions in our own industry.

### Attempts at Wagner Act Amendment

The movement towards amendment of the Wagner National Labor Relations Act has also gained strength in this past session. The unfairness of this act and of its administration has become increasingly a public scandal, and there has been a growing demand for revisions which would protect both the employer and employe, would encourage true collective bargaining, and would foster industrial peace based on friendly and mutually fair relations between workmen and management. Senator Burke of Nebraska, who spoke at our convention in Los Angeles last October, has been a leader in this movement.

This year for the first time it has been possible to secure open hearings before the labor committees in both Houses. In the course of these, nine witnesses for the mining industry appeared to relate their experiences under the Wagner Act and to point out the need of thorough-going amendment. Throughout the session, however, there appeared to be a deliberate effort to stall the hearings and to head off the widespread demand for revisions of the act. Resentment of these tactics finally came to a head in the House, which adopted a resolution providing for a special investigation, to be conducted under an aggressive chairman, and there are good indications that amendments will receive active consideration next year.

Another endeavor to extend the long arm of the federal government into mining operations in the various States was made this spring when Senator Neely of West Virginia introduced a bill to compel federal inspection of all coal mines by the Secretary of the Interior. This bore the sponsorship of Secretary Ickes and of Mr. John L. Lewis, and was apparently desired for use as a club in enforcing the Guffey Coal Act. I mention this because it illustrates a dangerous tendency which, once the precedent were established, could easily be extended to mines other than coal. We have opposed this bill vigorously, and thus far it has not been acted on by either House.

### Efforts to Extend Leasing System

I know you are also deeply interested in the public land policies of our government as they relate to the mining industry of the West. No less a government official than the Secretary of the Interior has recently given encouragement to a movement to abolish the long-established mineral land laws, and to substitute a leasing system similar to that now pursued for oil and gas, coal, potash, phosphates and sulphur. Not only this movement, which would take away from the prospector the historic right of locating and acquiring title to his mineral claim, but also various unwarranted withdrawals of public lands from mineral entry, have required continued vigilance on the part of mining's representatives. I am glad to report that your Senators and Congressmen are alert to these dangers, and that these movements have made but little headway at the recent session.

The 76th Congress marked the end of the moratoriums on assessment work which had been granted in each of the previous seven years. It had been understood, when the 1938 bill suspending assessment work was signed, that it would be the last such measure; and on May 19 of this year, upon action by Senator Hayden of Arizona, the 1939 moratorium bill was definitely killed. Senator Hayden explained that it was important to take action in ample time to permit claim-holders to finish their assessment work by July 1. Subsequently a bill jointly introduced by Senator Murray of Montana and Congressman Murdock of Arizona extended for two months the period in which last year's assessment work may be performed; under this Act claim-holders who commence such work by August 31 and continue with reasonable diligence until its completion will be protected in their rights.

### Federal Control of Stream Pollution Defeated

An endeavor to apply centralized federal control to the local problems of stream pollution was again defeated in this last Congress. Instead, a reasonable "survey and planning" type of water pollution bill, providing for federal cooperation with local authorities, was passed by the Senate and was reported to the House, but failed of enactment in the closing days. The mining industry has consistently opposed measures for drastic federal control which would impede or close down hundreds of mining operations which must deposit some of their waste materials in the natural drainage channels, and has shown its willingness to cooperate in any reasonable measures to solve problems thus created. It is anticipated that advocates of a drastic water pollution bill will be active during the congressional recess, and that the issue will again come before the next session.

### Zinc Tariff Cut and Its Effects

There have been other recent developments in Washington not relating directly to the actions of Congress, but which directly affect the prosperity and future welfare of mining in Montana. About a year and a half ago, our State Department announced the intention of negotiating a second reciprocal trade treaty with the Dominion of Canada, and included zinc, one of the major products of this State, in the list of commodities subject to reductions in tariff. In spite of vigorous protests by zinc miners and smelters throughout the country, and even though the State Department, in response to inquiries from Senators and Congressmen, gave repeated assurances that there was "nothing to worry about," when the treaty was announced on November 17th last, zinc producers learned that their modest tariff protection had been cut by 20 percent, equivalent to $7.00 per ton of metal. At the same time the duty on cadmium, an important by-product of zinc smelting, was reduced by 50 percent. Although the cut was made as a concession to Canada, under the most-favored-nation treaties it applies to almost all of the other zinc-producing countries.

The immediate effect was a sharp drop in price and heavily increased imports of foreign zinc into our market. World output of zinc, produced from higher grade ores than those which we mine, and largely as a by-product of other metals, is at record high levels, and a more inopportune time for curtailing the protection of our tariff could hardly have been imagined. Already a number of zinc mines and smelters have been forced to close, and the prospect continues dark unless a higher rate of duty can be obtained.

These facts have been presented to the proper authorities in Washington, and a conference will be held next

(*Continued on page 47*)

# MECHANIZATION in Modern ANTHRACITE MINING*

By EDGAR C. WEICHEL
Assistant General Manager
Hudson Coal Company

SOME thirty years ago, the anthracite operators, being faced with the necessity of developing an economical method of mining their large coal reserves in thin seams, began to experiment with machinery for cutting and for loading coal. The first machines brought into the anthracite region were those for cutting coal. Their purpose was to increase the miner's output and at the same time decrease the amount of fine sizes resulting from the heavy blasting of these thin seams. These experiments led to further research for a means of transporting the coal from the working face to the mine car standing on the gangway so as to dispense with the costly work of taking bottom rock to provide sufficient head room for the mine car to pass to the face, which was the common practice in those days.

The first coal conveying machinery introduced for work in conjunction with the undercutters was the chain conveyor. These were tried in rooms, but the difficulty experienced in moving the undercutter machine from one face to the next and the amount of time lost in doing this moving caused the operators to experiment with the retreating longwall system of mining, using undercutter and chain conveyors. The results were quite satisfactory for some 300 feet of retreat, but after that distance it was found to be impossible to keep the face open due to roof pressure which collapsed and closed in the face. The roof could not be satisfactorily controlled by timbering with either cogs or props, and a semi-longwall panel, approximately 200 feet in width, was adopted, which allowed the mining to be completed before serious roof pressure developed.

Several years later the double drum scraper loader was developed and introduced. This loader worked satisfactorily and its use spread, particularly in the mining of thin seams, for both room and longwall systems of mining.

When the market for anthracite decreased due to the increase in the consumption of substitute fuels and the generally depressed economic state of the country, more and more machinery was put into service in an endeavor to reduce the production cost in proportion to the reduction in the selling prices. This brought into use new types of machines, such as belt type conveyors, shaker conveyors, pit car loaders, duckbills, car puller hoists, etc.; also improvements in the coal cutting machines, the scraper loaders and chain conveyors. It was found that by mechanizing an entire section of the mines certain advantages were gained:

1. Concentration of mining operations in smaller areas due to the increase in output per working place by the use of machinery.
2. Reduction in transportation costs because it was no longer necessary to place single cars at each working face.
3. Increased probable life of a colliery nearing exhaustion by obtaining a larger production from fewer working places and thereby having a tonnage divisor sufficiently large to carry the overhead.
4. Reduction in the cost of timber maintenance by substantially shortening the period required to work out a particular portion of the mines.
5. Greater safety through more intensive supervision in concentrated mining areas.

To date the large mobile type equipment has not proven satisfactory for anthracite mining, due chiefly to the pitching of the coal seams. It is the opinion of the writer that the shaker conveyor, of all the types of machines manufactured, is the most useful to the anthracite operator because of its flexibility and adaptability to meet most of the prevailing conditions.

In general, mechanical equipment for mine use must be of rugged construction, but can it not be made smaller and of lighter materials and still retain the strength and durability desired?

Six specific mining conditions are now described to illustrate the diversity in application of the various types of coal cutting and loading equipment.

### Condition No. 1

*Character of Mining:* Gangway and airway development in thin coal, using uphill shaker conveyor and small scraper.

*Bed Conditions:*

a. Thickness of seam—24 to 36 inches.

b. Pitch of seam—zero to 6 degrees.

c. Character of roof—sandstone with bell or hogback formations occurring throughout. This roof seldom requires any support in gangways and only a minimum amount of propping in airways and rooms.

d. Character of bottom—hard sandslate.

e. Overburden—400 to 500 feet of rock, with 9 intervening seams of coal, all first mined.

*Equipment used:*

*Gangway:* One Uphill shaker conveyor and one compressed air drill.

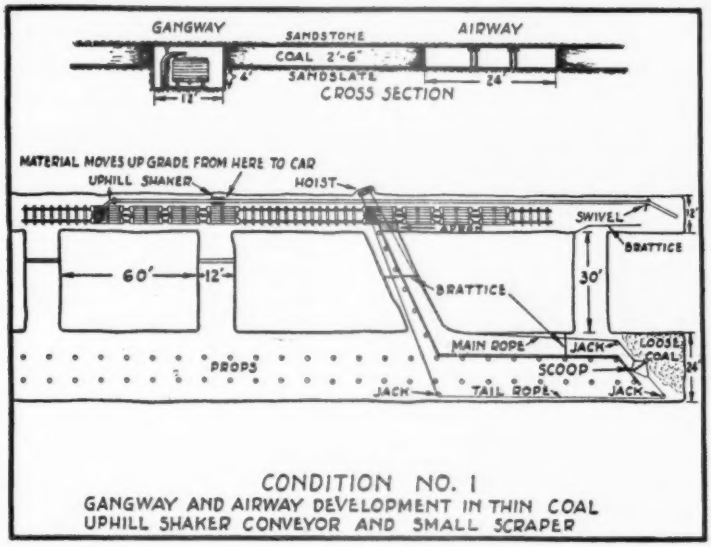
*Airway:* 7½ h. p. double drum scraper loader unit and compressed air drill.

*Performance:*

*Gangway:* Number of lineal feet of gangway advance per shift—5½ to 6 feet.

*Airway:* Tons per day—25 tons; tons per man day—8½ tons.

* Presented to 2nd Annual Anthracite Conference, Lehigh University, Bethlehem, Pa.




CONDITION NO. 1
GANGWAY AND AIRWAY DEVELOPMENT IN THIN COAL
UPHILL SHAKER CONVEYOR AND SMALL SCRAPER

*Force Employed:*

*Gangway:* One miner and 2 laborers per shift.

*Airway:* One miner and 2 laborers per shift.

*Mining Plan:*

1. Development — Double entries driven on line to form room panels 300 to 350 feet wide.

   a. Width of entries—gangways 12 feet; airways 24 feet.

   b. Height—gangways 6½ feet. (Approximately 3½ to 4½ feet of bottom rock is taken in the gangway; airway is driven in coal only.)

   c. Width of gangway pillars—30 feet.

   d. Breakthroughs or cross-cuts—12 feet wide every 60 feet.

*Mining Method:*

In the gangway development the coal is blasted off the solid for a distance of 12 feet, and then the bottom rock is lifted for the same distance, the thickness of bottom rock cut being sufficient to make the total height of the opening about 6½ feet. All drilling is done with compressed air drills and all holes are fired electrically.

An uphill shaker conveyor is used for transporting the coal and rock from the face to the mine cars, the trough line being installed along the side of the gangway opening. All loading is done by hand shoveling onto the shaker. Normally, the gangway can be advanced 300 feet before the unit must be dismantled and moved forward.

The advantages of using an uphill shaker conveyor for gangway development are that the transportation is simplified and greater speed is attained in the loading cycle. The cars can be moved to and from the operation in trips instead of one car at a time, which is necessary when material is loaded directly into the mine car at the face. The rate of advance has been doubled by the use of machinery.

In the airway the coal is blasted off the solid in the same manner as in the gangway.

A small type double drum scraper loader hoist and the accessory equipment are used to transport the coal from the face to the mine cars standing at a loading point on the gangway. This necessitates pulling the coal through a breakthrough driven on an angle between the airway and the gangway. The equipment is moved forward every 300 to 400 feet and is so placed that the loading points for the gangway and the airway are separated by at least 50 feet.

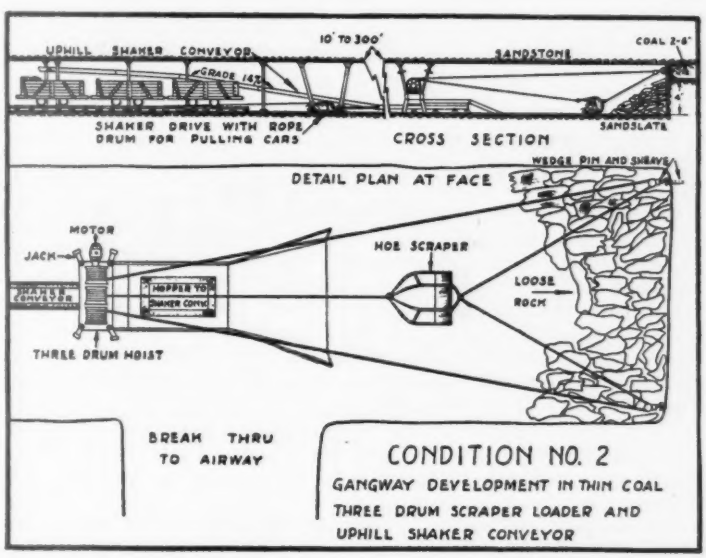
The cost of developing a thin seam of this kind is substantially reduced by driving the airway in coal only. Of course, it must be made wide enough to carry the volume of air that must pass through these workings. The advantages of using the small scraper unit in this kind of work are:

1. The hoist can be placed on the gangway at the loading point so that the laborer who operates the hoist can also load and move the cars.
2. The supplies and equipment can be hauled into and out of the place without difficulty by means of the ropes.
3. When the equipment must be moved forward to a new loading point it is easy to move the hoist and loading apron along the gangway, whereas to move any other kind of equipment would require considerable laborious work in a constricted space.

To keep the face of the gangway even with that of the airway, two shifts must be worked in it to every one shift in the airway. The difference of rate of advance in this face is due to the time taken to cut bottom rock in the gangway.

### Condition No. 2

*Character of Mining:* Gangway development in thin coal, using three drum scraper loader and uphill shaker conveyor.




CONDITION NO. 2
GANGWAY DEVELOPMENT IN THIN COAL
THREE DRUM SCRAPER LOADER AND
UPHILL SHAKER CONVEYOR

*Bed Conditions:* (Same as Condition No. 1.)

*Equipment used:*

*Gangway:* One uphill shaker conveyor; and one 25 h. p. 3 drum scraper loader unit, and one compressed air drill.

*Performance:*

*Gangway:* Number of lineal feet of gangway per shift—5 to 5½ feet.

*Force Employed:*

*Gangway:* 1 miner and 2 laborers per shift.

*Mining Plan:* (Same as Condition No. 1.)

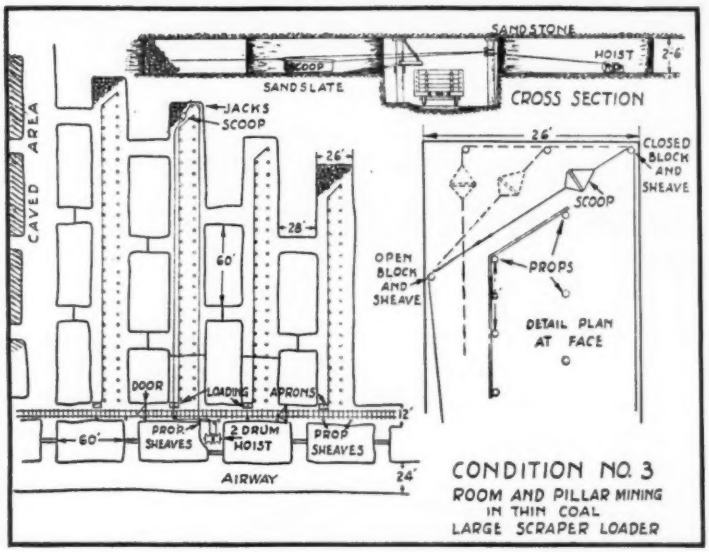
*Mining Method:*

In the gangway development the coal and rock are blasted in the same manner as described in Condition No. 1. Also, a shaker conveyor is used for transporting the material to the mine cars.

In an endeavor to completely mechanize the loading of the coal and rock in the gangway, an experiment was conducted, using a 25 h. p. 3 drum scraper hoist, along with a hoe type scoop and necessary accessories for this work. A loading ramp, consisting of a slide, hopper and frame for mounting the hoist, was erected over the last trough of the conveyor line near the working face. A hoe type scoop was used in this work because its heavier structure makes it more adaptable for scraping rock. One main rope and two tail ropes, fleeted by sheaves fastened to wedge hangers driven in the coal in each corner of the face, were used so that the operator could manipulate the scoop to either side of the face. By using these two tail ropes the amount of hand shoveling was reduced to a minimum.

One man operated the hoist and he was provided with a 200 watt flood light so he could clearly see the face and move the scoop to the best advantage when loading.

This experiment was conducted for two years, and the results compared with hand loading to uphill shaker conveyors in similar conditions. The performance when loading loose rock with the scraper hoist was increased, but due to the necessity of moving the hoist and equipment ahead for every 60 feet of advance, and to slight delays due to cleaning the place when changing from coal to rock, or vice versa, it was found that the rate of advance with this extra equipment was slightly less than where loading was done by hand to the conveyor.




## Condition No. 3

*Character of Mining:* Room and pillar mining in thin coal, using large scraper loader.

*Bed Conditions:* (Same as Condition No. 1.)

*Equipment used:* One 25 h. p. double drum scraper loader unit, and one compressed air drill.

*Performance:* Tons per day—101 tons; tons per man day—8½ tons.

*Force Employed:* 1 miner, 1 2nd miner, 1 scoop boss, 8 laborers and 1 hoist engineer.

*Mining Plan:*

Development: Same as Condition No. 1.

Room and Pillars:

a. Room centers—54 feet.

b. Room width—26 feet. (Open full width at gangway and right angles to it.)

c. Breakthroughs or cross-cuts—12 feet wide every 60 feet.

*Mining Method:*

The coal is blasted off the solid, 12 to 15 holes being necessary to make a full cut across the 26 foot face. The spacing on each hole is between 1½ to 2 feet. The holes are fired electrically in series, using delay igniters.

Four rooms are worked as a unit. The coal is mined in each face in rotation, and the loading follows the mining in the same order. The rooms are opened for a distance of 20 feet by hand method; then the loading platform and loading apron are installed. After this the coal is conveyed by means of the scraper scoop from the face to the mine car. A double drum scraper hoist driven by a 25 h. p. motor is used in this work. The scoop is a "V" type, having a full load capacity of approximately 100 pounds. The hoist is set up in a cross-cut between the gangway and airway as near the middle of the four rooms as possible. The main and tail ropes are fleeted, as shown on the sketch illustrating this condition. It also shows the pullway for the scoop, which is made by nailing a single line of plank or hard-wood boards between props along one side of the room.

By employing this system of mining and type of equipment in seams of this kind, the amount of deadwork is kept at a minimum; the investment in equipment is relatively small; there are few pieces of equipment to be moved in these low places, and most important of all, the coal is transported and loaded mechanically.

## Condition No. 4

*Character of Mining:* Room mining under bad roof, using belt elevating conveyors, shaker conveyors and duckbills.

*Bed Conditions:*

a. Thickness of seam—coal 85"—total 100".

b. Pitch of seam—zero to 10 degrees.

c. Character of roof—black slate of slabby character, requiring cross timbers every 6 to 8 feet over the conveyor way and a line of props in the gob space. In some parts of the rooms it is necessary to place lagging over the timbers.

d. Character of bottom—fire clay.

e. Thickness of overburden—85 to 120 feet.

*Equipment used* (In single room): One shaker conveyor, one belt elevating conveyor, one duckbill, one car puller, and one electric drill.

*Performance:* Tons per day—86.4 tons; tons per man day—14.6 tons.

*Force Employed:* 1 miner, 1 2nd miner, 1 miner's helper and 3 laborers.

*Mining Plan:*

Development—double entries driven on line to form room panels 350 feet wide.

a. Width of gangways and airways—12 feet.

b. Height of gangways and airways—8¼ feet.

c. Width of gangway pillars—30 feet.

d. Breakthroughs or cross-cuts—12 feet wide every 60 feet.

Rooms and Pillars:

a. Room centers—40 feet. ("Necked" before widening to full width of 20 feet.)

b. Room width—20 feet.

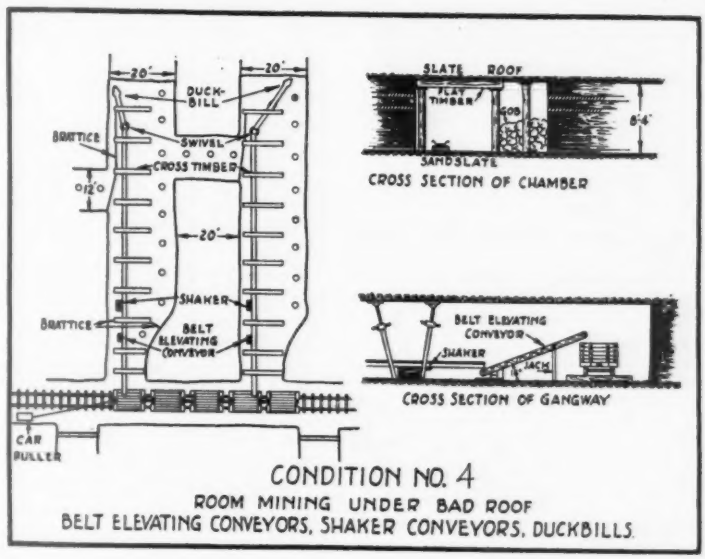
c. Breakthroughs or cross-cuts—12 feet wide every 60 feet.

*Mining Method:*

The coal is blasted off the solid, all drilling being done by an electric drill.

For the first 25 feet the coal is loaded by hand shoveling into the cars standing on the gangway. Then a belt elevating conveyor is installed and the place is advanced for another 25 feet when the shaker conveyor and duckbill are installed. From then on the coal is loaded mechanically by this equipment. A car puller is used for moving the cars in trips at the loading point.

By using this combination of shaker chute, duckbill and belt elevating conveyor in these conditions, practically all hand shoveling of coal can be eliminated, and the rate of output substantially increased.




CONDITION NO. 4
ROOM MINING UNDER BAD ROOF
BELT ELEVATING CONVEYORS, SHAKER CONVEYORS, DUCKBILLS

## Condition No. 5

*Character of Mining:* Room and pillar mining in thin coal, using multiple belt and chain conveyors.

*Bed Conditions:*

a. Thickness of seam—27".

b. Pitch of seam—0 to 3 degrees.

c. Character of roof—slabby sandstone.

d. Character of bottom—slate.

e. Overburden—400 feet, with 4 intervening coal beds, all first and partially second mined.

*Equipment used:* 3 main belt conveyors (each 1,200 feet in length); 2 gangway belt conveyors (each 250 to 800 feet in length); 3 gathering chain conveyors; 16 room chain conveyors; 4 face chain conveyors; 16 undercutters (shortwall type); 16 compressed air drills; and 16 blower fans.

*Performance:* Tons per day (two shifts)—1,400 tons; tons per day per producer—10 tons; and tons per day per man employed—7.45 tons.

*Force Employed:*

*Loading shift—2 shifts per day.*

Driving gangways and rooms: 16 miners, 16 machine runners and 32 laborers.

Cutting rock in gangways: 2 miners and 4 laborers.

Company and Maintenance Men: 9 room junction tenders, 3 main belt junction tenders, 1 footman, 2 belt cleaners, 2 electricians and 2 pipemen.

In addition to the force employed on the two loading shifts, 2 belt repairmen and 8 laborers are employed on the third shift.

*Mining Plan:*

1. Development—panels 250 feet in width and 800 feet in length.

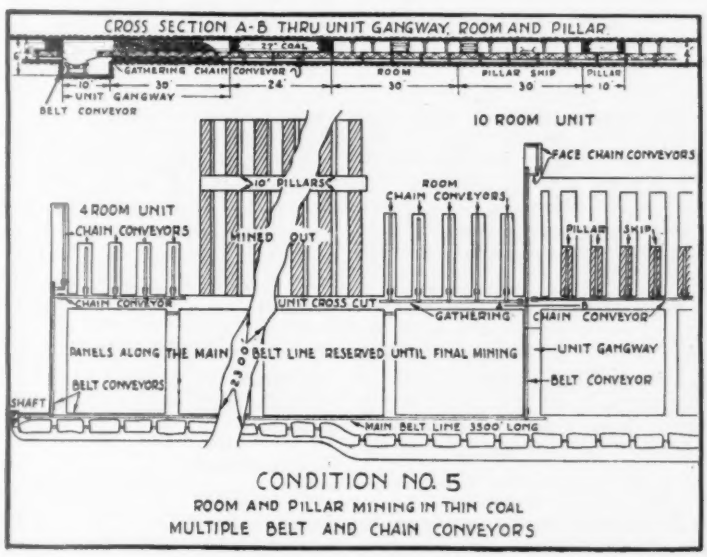
a. Width—Main gangway—12 feet for 3,000 feet, and 40 feet for remaining 500 feet.

Unit gangway—40 feet.

Unit cross-cut—30 feet.

b. Height—Main gangway—6 ft. for 12 ft. width.

Unit gangway—6 ft. for 10 ft. width.




CONDITION NO. 5
ROOM AND PILLAR MINING IN THIN COAL
MULTIPLE BELT AND CHAIN CONVEYORS

Unit cross-cut—4 ft. for 8 ft. width.

c. Pillars—between main gangway and airway—30 ft. wide, with cross-cuts or breakthroughs 12 ft. wide every 60 ft.

d. Rooms and Pillars:

a. Room centers—70 ft.

b. Room width—30 ft.

c. Room pillars—30 ft. skip taken on all room pillars, reducing width to 10 ft., which is not recovered.

*Mining Method:*

This condition covers a completely mechanized unit, with the coal traveling by chain and belt type conveyors from the working places to the shaft bottom. The main belt discharges to a coal pocket at the shaft where skip hoisting is employed to raise the coal to the surface.

The main gangway was first driven 12 feet wide, and later increased to 40 feet, so that all bottom rock could be stowed inside. The unit gangways and the unit cross-cuts are also driven wide for the same purpose.

The main belt line constitutes three separate units, each being approximately 1,200 feet in length. A track is placed alongside the main belts and a few mine cars and a battery locomotive are used solely for the purpose of transporting supplies and equipment to the unit gangways. This method eliminates any possible damage being done to the main belts through handling this material.

The unit gangway conveyors are similar to the main conveyors, being 26 inch troughed belts. As the development of the unit gangway advances through each panel the belt conveyor is extended to this limit. Advancement of the unit gangway is made by using one chain conveyor and two face chain conveyors. The installation is made on the opposite side from the main conveyor so that the face may be advanced at the same time the bottom rock is being cut and stowed in the middle of the wide place. The bottom rock is cut to provide space for belt installation and a travelway for the men.

Gathering chain type conveyors are installed to the right and left of the unit gangways in the unit cross-cuts. Each one of these conveyors is 375 feet in length and handles the coal from five room chain conveyors. The gathering conveyors discharge directly to the unit gangway belt.

A full unit constitutes eleven working faces, these being 10 rooms and one unit gangway. At this operation there is also another unit consisting of 5 working places, 4 rooms and 1 unit gangway delivering coal also to the main belt line. Between these two panels is an area which has been mined.

The first panel next to the main gangway is held in reserve until final mining, this being done for the protection of the property and the main belt units.

Rooms are driven 30 feet wide on 70 foot centers. Upon the completion of a room through the 250 foot panel a 30 foot skip is taken on the adjoining pillar. The remaining 10 foot pillar is not recovered. Props and cogs are used to support the roof and these, along with the 10 foot pillars, offer sufficient support to prevent caving of the roof. This, in turn, gives protection to the mechanical equipment involved and makes it possible to have a continuous flow of coal. Losses in production due to caves and moving equipment for its protection are eliminated.

Four men are employed in the face of each working place. All coal is undercut with shortwall undercutters, one machine being provided for each face. Compressed air drills are used for drilling and all blasting is done electrically.

Each working place is equipped with a blower fan and flexible tubing for conducting the air from the unit cross-cuts to the working faces.

All supplies are transported to the mouth of the rooms in the unit cross-cuts by laborers employed on the third or non-loading shift. These men also move and install the conveyors. Junction tenders are employed on the two loading shifts to minimize delays and provide as near as possible continual operation.

The use of equipment of this type and the method of mining employed result in decreased transportation costs through the elimination of mine cars for handling coal; concentration of mining operations with large production from a small area; continual flow of coal; less rock to be cut in development; transportation of supplies to the working faces over reversible conveyors and elimination of transportation accidents.

## Condition No. 6

*Character of Mining:* Longwall mining using steel props and shaker conveyor.

*Bed Conditions:*

a. Thickness of seam—72 to 84 inches, including an 18″ band of unmarketable bone on the top.

b. Pitch of seam—zero to 10 degrees.

c. Character of roof—sandslate.

d. Character of bottom—sandstone.

e. Overburden—250 to 375 feet.

*Equipment used:* One shaker conveyor, one undercutter (longwall type), two compressed air drills and one car puller.

*Performance* (Over 3-year period): Tons per 24 hour day—470 tons; and tons per man shift—13 tons.

*Force Employed:*

Morning shift: 1 miner, 11 shovelers and 2 carmen.

Afternoon shift: 1 miner, 2 drillers. 1 machine runner, 1 machine runner's helper, 8 propmen and 3 laborers.

Night shift: 1 miner and 5 laborers.

*Mining Plan:*

1. Development—Panels 300 to 400 feet in width and 1,500 to 3,000 feet in length.

a. Width of gangways and airways—12 feet.

b. Height of gangways and airways—6½ feet.

c. Width of gangway and airway pillars—30 feet.

d. Cross-cuts—12 feet wide every 60 feet.

2. Longwalls—length according to panel width plus that of gangway pillar.

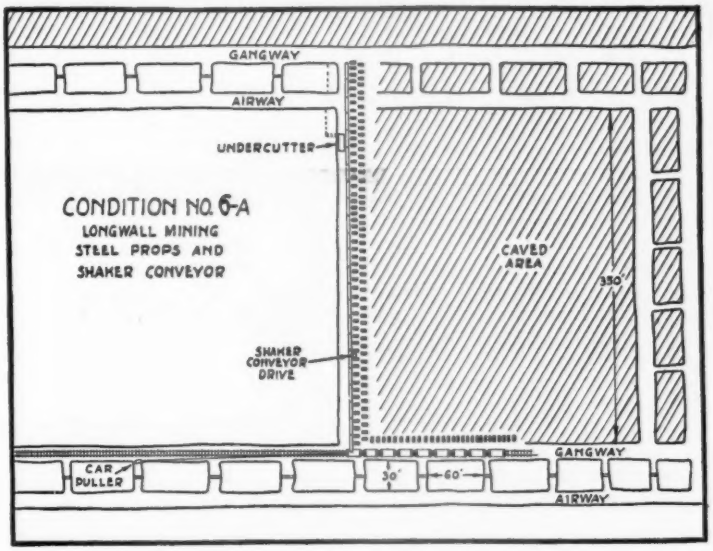
*Mining Method:*

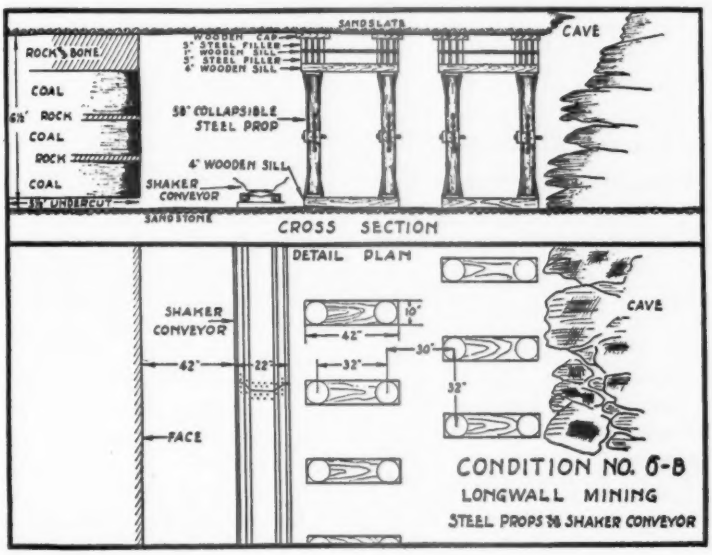
Upon completion of the development of a panel to the extreme limits of the property, the work of preparing the longwall face is started.

Two rooms are driven up the pitch from the lower to the upper gangway, the inner one to form the longwall face, and the outer one, which follows along the property line or barrier pillars, to act only as a companion opening for proper coursing of the ventilation while establishing the longwall face.

The inner room is driven with a shaker conveyor, and as the face advances, two double rows of steel props are placed so that at the completion of the room the longwall face is established. The outer room is usually driven with a small scraper unit and the pillars between the two rooms are immediately withdrawn, using this same scraper unit.

The steel props are set in staggered double rows and are placed on 32-in. centers. Each double row is tied together by using wooden sills, 4 x 10 x 42 inches on both top and bottom. Where the roof height is greater than the length of the props, steel fillers 10




inches in diameter and 5 inches in height are used to increase the length of the props. Between these fillers, wooden sills 1 x 10 x 42 inches are placed to increase the sliding friction and to give a cushioning effect as the roof pressure comes on the props.

The steel props used in mining this bed are 58 inches in length, fully assembled. This prop weighs 422 pounds and is considered the longest that can be handled efficiently by two men. It is capable of withstanding a balanced direct load of 450 tons. The essential feature in the successful use of this type of prop is its instant collapse from its full height to a relatively small percentage of that height. The collapse is accomplished by rotating the key, attached to the center wedge through an arc of 90 degrees. The center wedge, having its sides pitched on approximately 10½ degrees, slides away from the upper and lower prop sections and the collapse is completed. A chain is attached to the three parts that make up the complete prop to keep them together when the collapse is made.

The cycle of operation constitutes the working of three shifts over a 24-hour day. On the morning shift the coal is loaded out by a crew of 14 men, one of whom is the miner in charge, and two of whom top and move the cars on the gangway. The remaining men are shovelers who load the coal onto the shaker chute.

To provide adequate space on the gangway for the storage of empty cars so that they can be handled in trips of 10 to 15, one double row of steel props is left standing on the upper side of the gangway where the coal has been mined. These props, along with the track, are recovered as the longwall face retreats.

On the afternoon shift, the entire longwall face is undercut and drilled for blasting; the shaker conveyor is dismantled, shifted and reassembled in a line 42 inches from the solid face; and the double row of steel props next to the mined-out area is collapsed, shifted and re-set between the conveyor and the other double row of props. Four men do the cutting and drilling, 3 men shift the conveyor and 8 men move the steel props—with a miner in charge of all the work.

The night shift work consists of blasting the undercut face and shifting the refuse to the gob area beyond the steel props. Six men are employed for this work, one of whom is a miner in charge.

The advantages of using equipment of this kind under these conditions are —concentration of mining operations, giving large production per working place and per unit; positive roof control by relieving the pressure of the overburden on the working face through periodic breaking of the roof; decreased material cost of roof support as compared to wooden post and cog longwall mining; and less accidents through better supervision, more uniform daily tasks for the men, and unaggravated roof condition at the face due to hanging mine roof.

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## Grass Valley Payrolls Increasing

The monthly payroll in Nevada County, Calif., mines totals more than $385,000, the largest in the history of the county, according to a recent announcement from Grass Valley. It was also reported that employment in the county is steadily increasing.

The Idaho Maryland has a crew of 510 men at work, while the Empire Star Co., Ltd., has more than 400 at the Empire, 266 at the North Star, 150 at the Zeibright and 115 at the Murchie. In addition, the Idaho Maryland also has 316 men employed at its New Brunswick property.

The Lava Cap mines has increased its payroll to 275 men, while 60 men are employed by the Melville interests at San Juan. Considerable dragline dredging is also under way, with eight small dredges employing from 6 to 16 men each now operating in the Grass Valley, Nevada City and You Bet districts.

# With the COAL DIVISION

## of the AMERICAN MINING CONGRESS

# MERCURY ARC RECTIFIERS for MINING CONVERSION EQUIPMENT*

### What Is a Rectifier?

FUNDAMENTALLY, a rectifier is a device designed to pass current in one direction only so that when connected to an A.C. system a continuous flow of uni-directional current is obtained instead of the usual alternating or sinusoidal current. Some of the more common varieties of rectifiers are the copper oxide disc type, used for oil circuit breaker closing mechanisms, electroplating and miscellaneous small power; the tungar bulb, used in battery charging operations; hot cathode emission vacuum tubes, such as those used in ordinary radio sets and also for small power tubes; and the mercury arc type, used for general power requirements. This paper will confine itself to a discussion of the mercury arc type rectifiers and their application.

### Types of Mercury Arc Rectifiers

There are two general types of mercury arc rectifiers—namely, the well known multiple-anode, and the ignitron, or single anode per tank type.

Generally speaking, the multiple-anode rectifiers are of welded steel construction and equipped with the necessary vacuum pumping and regulating equipment to maintain the desired degree of vacuum for most satisfactory operating conditions. One exception to this construction are the multiple-arm, sealed steel, and glass bulb rectifiers, quite extensively used in Europe and to a limited extent in the United States.

The ignitron type power rectifiers are of welded steel construction also, and may be of either the pumped tank or sealed tube design.

### How Do Rectifiers Work?

The mercury arc power rectifier depends for its operation on the rectifying properties of an electron-emitting mercury pool cathode and non-electron-emitting anodes enclosed in a highly evacuated chamber. The normal current flow, in the conventional sense, is in one direction only—namely, from the anodes to the cathode. This type of rectifier is generally known as the cold-cathode type, since the cathode is a pool of cool liquid mercury.

Rectifier operation might be likened to a synchronous switch with the anodes as segments and the arc from anode to cathode as the moving switch blade. The anodes successively carry current when their turn comes as the arc sweeps around, following the phase rotation of the alternating current power supply.

The principle of operation can best be illustrated by the single-phase, full-wave rectifier, a schematic diagram of which is shown in Fig. 1. With alternating A.C. voltage impressed on the transformer primary, the anodes A and B will alternately become positive each half cycle. As each anode becomes positive, current flows from it to the cathode and back through the load to the neutral of the transformer. This produces a pulsating direct-current as shown in the diagram. In large commercial rectifiers, a multiplicity of anodes supplied with 6- or 12-phase power is used, in order to obtain a smoother D.C. output.

The firing action of a 6-phase circuit is shown in Fig. 2 with one pair (Nos. 1 and 4) of anodes and their respective transformer windings shown in heavy lines. If there were no other windings than these two in the secondary of the power transformer, the action would be the same in the single-phase illustration. Each of the six anodes fires in its turn, beginning at 1 and going around 2, 3, 4, etc., as its voltage becomes positive. When anode 4 has reached a higher positive potential than anode 3 immediately ahead of it, 4 will begin to fire, 180 electrical degrees from the point where anode 1 began to fire. In the single-phase illustration, an anode carries current slightly more than 180 degrees, whereas in the 6-phase combination the anodes fire for approximately 60 electrical degrees when supplied from a diametrically connected 6-phase transformer.

The electronic action in a multiple anode rectifier is illustrated in Fig. 3. Let us assume that the starting anode rod has dipped into the mercury pool and been withdrawn, thereby striking an arc and establishing a cathode spot on the surface of the mercury, which will be maintained thereafter by the

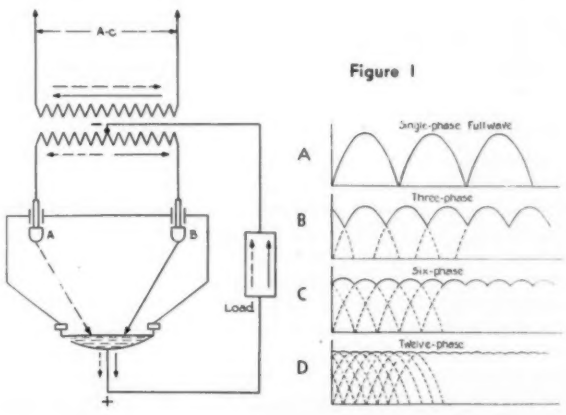


Figure 1

* This paper is an extract of an address given by F. P. Brightman of the General Electric Company, before the New River and Winding Gulf Electrical and Mechanical Institute at Mt. Hope, W. Va. It is presented here to the Coal Division Power Committee of which Mr. Brightman is a member.

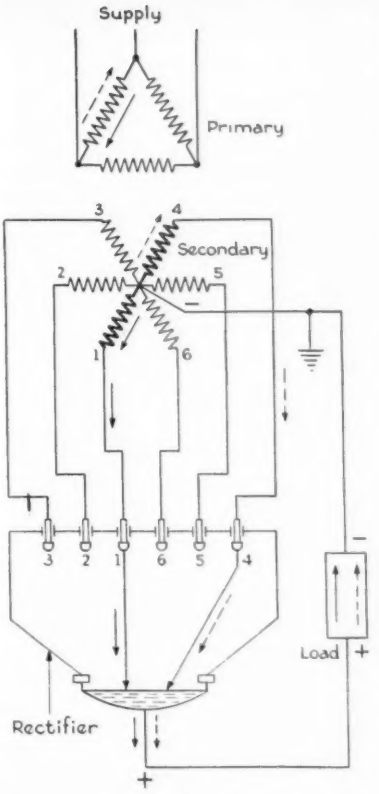


Figure 2

excitation anodes. Electrons are emitted from the cathode spot into the space above, where they ionize the mercury vapor by collision. When an anode is firing, it has a positive potential with respect to the cathode of about 20 volts, and the negatively charged electrons are attracted by the positively charged anode and flow toward it in sufficient numbers to carry the anode current. At the same time the positive ions flow toward the negatively charged cathode where they bombard the mercury pool and drive off more electrons.

The voltage drop across the arc or the arc-drop in a normal multiple-anode rectifier ranges from 20 to 30 volts, and this times the amperes in the arc represents the power loss which produces a considerable amount of heat at the cathode spot on the mercury pool. The result is a thermal action somewhat like that in a steam boiler (Fig. 5). The heat vaporizes the mercury at a rapid rate and the vapor flows upward and is condensed on the water-cooled walls of the vacuum chamber. The liquid mercury then flows back into the cathode pool to be used again.

The ignitron type rectifiers operate in the same fashion fundamentally. The essential difference is that each main anode and its firing anode are housed in a separate steel vacuum chamber with a mercury pool at the bottom.

## Rectifier Power Factor

Mercury arc rectifiers and their power transformers operate at a slightly lagging power factor. This lagging RKVA consists of a fundamental or displacement, and a harmonic component. The displacement component power factor is the ordinary garden variety with which everyone is thoroughly familiar from past experience with rotating machines. It is fairly high, approximately 95 percent for 6-phase double-Y connected units (300 KW) and 96 percent for 4-tube (200 KW) bi-phase connected rectifiers. This component can be compensated for by the addition of capacitors to provide a corresponding amount of leading reactive Kva.

The harmonic component of the power factor is an inherent characteristic of the particular design, and can only be corrected by the addition of special filters. Combining the fundamental and harmonic components gives an overall power factor of 93-94 percent lagging at full load.

## Application of Rectifiers Versus Rotating Conversion Equipment

In order to obtain a true picture of rectifiers, including their advantages and limitations, so that an intelligent choice may be made between them and synchronous M.G. sets and converters—the old standbys for mining substations for years—to determine which type of equipment is best suited for the needs of a particular installation, it is necessary to compare their various characteristics.

## Relative Efficiency

Relative efficiency of the various types of equipment available is one of the first and very important factors to be considered in selecting conversion equipment. The efficiency curves (Fig. 5) show very clearly the superiority of rectifiers in this respect as compared with either motor-generator sets or synchronous converters.

During the main shifts, the average mining load is a series of sharp peaks and valleys superimposed on a fairly

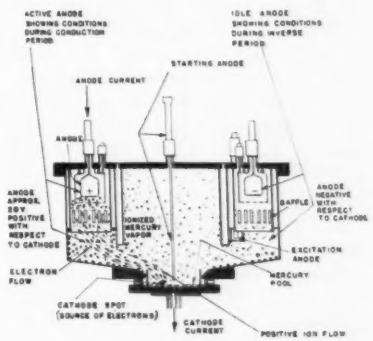


Figure 3

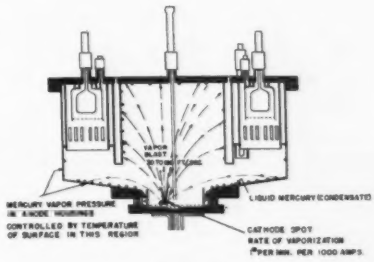
VAPOR BLAST
MERCURY VAPOR PRESSURE IN ANODE HOUSINGS
CONTROLLED BY TEMPERATURE OF SURFACE IN THIS REGION
LIQUID MERCURY (CONDENSATE)
CATHODE SPOT RATE OF VAPORIZATION
PER MIN. PER 1000 AMPS.

Figure 4

steady base load. At other times there are periods of very light or even no load when the mine isn't working, and yet it is necessary to keep power on the trolley. It is during these light load periods that the higher efficiency of the rectifier and its very light no load losses stand out so prominently. The loss curves for the three types of equipment show the marked improvement of the rectifier over the rotating machines under light load conditions. Incidentally, the rectifier losses include the anticipated KW consumption of the water circulating pump motor which the standard specification sheets do not include.

In order to better visualize the possible reductions in the power bill due to the higher efficiency of rectifiers, let us consider a hypothetical mine operating cycle and determine the power cost differential between a 300 KW-275 V. D.C.—2300 V.—3-phase—60 cycle A.C. pumped tank ignitron rectifier and a similarly rated .8 P.F. synchronous M.G. set.



V 25 19 9 SEP 39

Let's assume that the mine in question is working five days per week with three seven-hour shifts per day with an electrical load factor of 40 percent, and that for the remaining three hours per day and one whole day per week it is necessary to keep the substation on the line with a load factor of 7 percent. Power costs .6 cents per KW-hour in the low cost block from which our expected savings will be deducted and the monthly demand charge is $1.77 per KW. From the loss curves we find that there is a difference of 19 KW at 40 percent load, and 22 KW at 7 percent load between the M.G. set and rectifier in favor of the latter.

On this basis there will be an estimated saving of 2860 KW hours per month which amounts to approximately $900 per year at .6 cents per KW hour. Inasmuch as the average difference in losses shown in the curves is at least 20 KW in favor of the rectifier, the overall demand charge should be correspondingly reduced—at $1.77 per month this reduction would amount to an additional saving of $425 per year.

### System Power Factor Correction

A great many mines operating on purchased power have power contracts which either make no mention of power factor at all or set a generously low minimum which is easily met. On the other hand, there are many power contracts including some form of power factor clause. This recognition of system power factor may take the form of a bonus, a refund, or a penalty, but in either case the result is the same, namely, a higher power bill if the system power factor is low.

The synchronous M.G. set fits into this picture very nicely as the .8 PF motor delivers a substantial amount of leading reactive Kva. to the system for power-factor correction—.6 of the motor's full load Kva. rating. It is usually operated with the motor field set to give .8 PF leading at full load, and consequently is over-excited at fractional loads; therefore, it delivers a larger amount of leading reactive Kva. at light loads than at full load or overload. This characteristic is advantageous in that even though the load on the M.G. set drops, the corrective effect is still available.

A synchronous converter with its transformer operates at a trifle under unity power factor when the field is set at the current value for which it was designed. Although the synchronous converter does not deliver any leading reactive Kva., its power factor is so high that, when combined vectorially with an otherwise low power factor load, it tends to raise the overall power factor of the load.

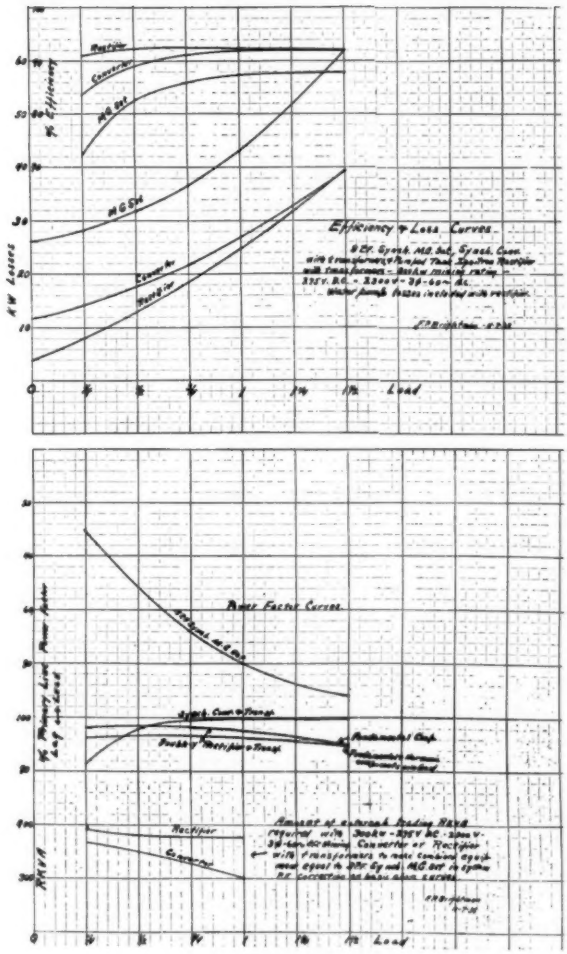


Figure 5

As explained previously, the fundamental component power factor of rectifiers with their transformers is approximately 95 percent and 96 percent lagging for the double-Y and double bi-phase units respectively.

If it happens that the power contract requires high power factor and it is desired to take advantage of the high efficiency rectifiers or converters, it is a very simple matter to install the necessary amount of leading reactive Kva. in the form of capacitors to bring the overall system power factor to the desired value.

A 300 KW mining rectifier installation would need approximately 375 Kva. in capacitors at full load to make the combined installation equal to a synchronous M.G. set in system power factor correction. A similar converter would need 261 Kva. in capacitors.

### Comparative Overload Capacity

Synchronous motor-generator sets and converters for mining service are rated 50 percent overload for two hours and 200 percent load for one minute. The one minute rating is largely determined by commutation limits on the D.C. end, but the ability of the A.C. end to stay in step under the overload condition is also a factor.

The present standard rating of pumped-tank mercury arc rectifiers for mining service is 50 percent overload for two hours and 300 percent total load for one minute. This increased one-minute overload rating of the pumped-tank rectifiers plus their ability to carry even higher peaks for a few seconds makes them admirably suited for the mining load's series of high peaks. The continuous rating of a rectifier capable of carrying

these sharp peaks successfully without injury can be considerably lower than that of a rotating machine to do the same job.

For example, let us consider a typical mechanized mining load, consisting of main line haulage locomotives, gathering locomotives, loading machines, cutters and pumps, having a total connected horsepower of 450 with a one-hour capacity of approximately 1040 hp. With an assumed efficiency of 81 percent, these values would represent 369 KW connected continuous load and a one-hour load of 830 KW. Experience with typical mining loads indicates that you might expect peaks approximating the one-hour connected load capacity for short periods of, say one minute or less and, therefore, the conversion unit must be capable of handling 830 KW maximum. A 300 KW rectifier with a 300 percent one-minute rating would be capable of handling such a load successfully. It would require a 400 KW continuous rotating machine to do the same job, and even then the peaks would be in excess of its guaranteed rating. We have indicated a continuous load of 369 KW, but it is very improbable that all these machines would be in operation simultaneously, so let us assume a diversity factor of 75 percent. Such a diversity factor gives an expected continuous load of 277 KW, which is comfortably within the capacity of the 300 KW rectifier, already selected on the basis of the overload requirement.

At the present time the sealed tube units have a guaranteed rating of only 200 percent for one minute. like the rotating machines, but they are capable of carrying higher peak loads for periods of a few seconds duration, and it is quite probable that a careful analysis of the load requirements would indicate that the expected peaks were of sufficiently short duration to permit a sealed tube rectifier to handle the job better than a correspondingly rated rotating machine.

### First Cost

The initial investment cost of the complete substation equipment which determines one of the "fixed charge" items in the overall cost per KW-hr. per ton of coal is a very important factor in selecting conversion equipment.

The relative costs of the complete electrical equipment for a 300 KW full automatic, 275 V. D.C., 2300 V., 3-phase, 60 cycle A.C. mining substation using the synchronous M.G. set with switchgear as 100 percent are 112 percent for converter, switchgear and transformers; 93.5 percent for sealed tube ignitron rectifier, switchgear, transformers and water-air heat exchanger; and 135 percent for similar pumped tank rectifier equipment.

### Space and Weight Requirements

When it comes to a comparison of space requirements for an indoor installation, there isn't sufficient difference between the three types of equipment to be of vital importance. As a matter of fact, the motor generator set requires the least floor space, the synchronous converter second, and the rectifier a close third. A motor-generator set substation equipment consists of the machine and its switching equipment; a converter installation includes the converter and its transformers, usually three single-phase units and slightly larger switching equipment; and the rectifier installation includes the rectifier, switching equipment, transformer, usually 3-phase, and a heat exchanger. Even though the motor-generator set itself is considerably larger than either the converter or rectifier, the additional aisle space required for the greater number of units in the other two equipments more than compensates.

It would be entirely feasible, however, in the case of a surface substation to install the transformers, possibly the high voltage breaker and the heat exchanger for the rectifier out of doors, thereby saving materially on building costs.

The total weight for a complete substation is roughly the same for all three types.

### Maintenance

Unfortunately there are no definite data available relative to the comparative maintenance costs of rotating machines versus rectifiers. Logically they should be less for the rectifiers since the latter have no large main bearings, no commutators or brushes or vibration problems, and the various reports from users confirm this expectation.

The firing tubes have to be replaced occasionally—present guaranteed life is 10,000 hours, and more may be realized. In the pumped tank units it may also be necessary to change the igniter tips, but the experience with ignitron rectifiers to date has been very favorable in this respect.

As mentioned previously, it is expected that the main tubes of the sealed rectifier equipments will have to be replaced occasionally.

### Relative Installation Costs

Field experience seems to indicate quite definitely that installation costs of the large capacity rectifier equipments are lower than for the corresponding rotating machines due primarily to the elimination of the heavy foundations required for the rotating units. It is somewhat questionable, however, whether there would be such a substantial differential between the relatively small mining equipments since the principal variable-foundation cost is necessarily rather small initially, and even the rectifier must have some kind of footing.

### Reliability

Operating experience has shown that the pumped tank rectifiers are capable of reliable operation over widely varying types of service. Their ability to handle rapidly fluctuating and intermittent loads has been thoroughly demonstrated in railway service for many years. For example, the first of the 3000 KW, 3000 V. units put in service on the Lackawanna Railroad in July, 1930, has been in continuous service ever since, and its vacuum tank has never been opened.

### Summary—What Can Rectifiers Do for the Mining Industry?

This paper endeavors to give a brief overall picture of what rectifiers are, how they work, and how they compare with the "good old synchronous M.G. set and converter." As shown, the rectifiers, like everything else, have their weak points as well as their strong ones.

Rectifiers in the low voltages for mining service are relatively new to be sure, but fundamentally, they are the same as their big brothers which have been used for many years in railway and electrolytic service particularly, with highly satisfactory results.

They are not by any means a cure-all for the many mine power conversion and distribution problems, and the synchronous M.G. set and Converter are very definitely not has-beens. On the contrary, both rectifiers and rotating machines have their place.

However, rectifiers do offer some real advantages and benefits to the mining industry. They have high efficiency throughout their range, and

(*Continued on page* 47)



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Crowded meeting room at the Monday afternoon session on Prospects for the Metals

# SALT LAKE MEETING
# Outstanding Success

● ***Delegates to Sixth Annual Metal Mining Convention and Exposition of the American Mining Congress Loud in Praises of Meeting's Success***

ADVANCE predictions of a smashing success at the 6th Annual Metal Mining Convention and Exposition staged in Salt Lake City, Utah, August 28-31, were more than fulfilled, as a total of 2,116 mining men, manufacturers and ladies literally took over the city for a week of business and pleasure. In the face of crucial European developments at the time, which broke into war shortly after the meeting's close, this record is striking evidence of the importance mining men now attach to these annual meetings where problems of vital concern to the industry are thoroughly discussed and analyzed, cost-saving exhibits studied, and cordial acquaintances renewed under pleasant surroundings and circumstances. Salt Lake's warm hospitality equalled if not eclipsed the reception accorded the mining fraternity two years ago, and the delegates, manufacturers and guests were unanimous in terming the meeting one of the most highly successful ever held.

This year's program, arranged under the direction of a committee headed by George H. Rupp, manager, Mining Department, Colorado Fuel & Iron Corporation, equalled if not surpassed the successes of the past by the array of authoritative talent assembled in the eight sessions comprising the four-day program. A wealth of headline news kept issuing from the Minerals Building on the State Fair Grounds, headquarters of the convention and exposition, which even the imminence of war could not hold from the front pages.

Sharing the spotlight as a drawing card to the thousands who attended, was the complete and colorful exposition of mine equipment and supplies assembled in the arena of the coliseum, and the acclaim of both operators and manufacturers attests the success of the display, which is part and parcel of the convention. Although the registration of operators and visitors was slightly below that of last year, exhibitors generally agreed that they had never before welcomed a more serious and representative group of mining men. Pre-convention publicity had urged mine executives to have their men get full benefit from this magnificent array of machinery and supplies, and reports from manufacturers throughout the exposition indicated that those attending took the utmost advantage of this opportunity.

Delegates leaving at the end of the week were enthusiastic over the program and arrangements, and all those contributing to the success of the undertaking are to be highly commended and warmly thanked for their efforts. In addition to Mr. Rupp, mentioned above, special acclaim is due to James W. Wade, chairman of the general arrangements committee; Howard I. Young, President of the American Mining Congress; D. D. Moffat, chairman of the Board of Governors, Western Division; Oscar N. Friendly, chairman of the entertainment committee; James Ivers, chairman of the banquet subcommittee; M. D. Paine, chairman of the Country Club subcommittee; C. T. Keigley, chairman of the Saltair subcommittee; Lawrence

Fox, chairman of the welcoming luncheon subcommittee; William J. O'Connor, chairman of the welcome to delegates committee; Gloyd M. Wiles, chairman of the housing committee; J. O. Elton, chairman of the tours committee; G. W. Snyder, chairman of the publicity committee; J. D. Shilling, chairman of the exposition committee; and A. G. Mackenzie, secretary of the Utah Chapter, American Mining Congress. Sharing honors with the above are the hundreds of committee members who worked untiringly previous to the convention and throughout the week.

## THE PROGRAM

Convention sessions were formally opened at 10:30 Monday morning, by Julian D. Conover, secretary of the American Mining Congress, who referred to the many problems faced by the mining industry in the past year in its relations with the national government, and the assiduous attention which the American Mining Congress had found it necessary to give to the new issues arising in the 76th Congress. He pointed out the importance of the meeting, which he said "gives us an opportunity to take counsel among ourselves, to interchange ideas between the members of the industry, to hear from some of our officials in Washington, so that we may understand their viewpoint and they may understand ours, and to determine our policy in respect to these public issues which so deeply concern the industry's future welfare and prosperity."

Referring to the exhibits which filled the entire main floor of the building, Mr. Conover asserted: "The manufacturers of mining machinery are just as much a part of the mining industry as the mine operators. Throughout the year they are devoting their best efforts and engineering talents to the development of new equipment which will help us to get better recoveries and lower costs, and this week they have placed on display a lot of the newer things which they have developed for that purpose. They are here to help you, and we hope you will take time to inspect these exhibits carefully and to talk over your problems with the splendid men who are here representing these manufacturers. You will find there is at least one good idea in every one of these exhibits."

The following are excerpts from papers and discussions presented at the convention. Many of these will be published in full at an early date.

## Development of Domestic Resources

*Strategic Minerals Investigations by the Bureau of Mines,* By John Wellington Finch, Director, U. S. Bureau of Mines.

The large number of inquiries from many sources received by the Bureau of Mines during recent months indicates that there is widespread public interest in the so-called "Strategic Minerals Act," approved by the President, June 7, 1939.

Broadly the act may be divided into two parts; first, that part authorizing appropriations for the accumulation of stockpiles of strategic materials, and second, that authorizing appropriations for the investigation of domestic deposits of "Ores and other Mineral Substances" by the Bureau of Mines and Geological Survey.

Sections 2 to 6 of the act cover the procedure for acquisition of stocks of strategic materials. It should be be noted that the Bureau of Mines and the Geological Survey are not charged with any duties whatsoever in connection with such purchases. Producers in a position to supply mineral for stockpile purposes, therefore, should address inquiries to the Treasury Department, attention of the Procurement Division.

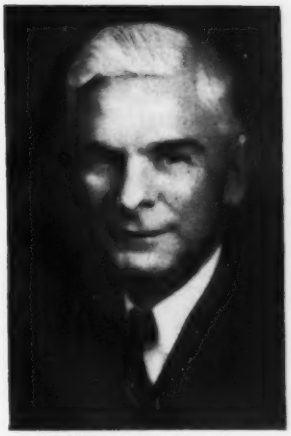
Section 7 (a) of the act defines the duties of the Bureau of Mines and the Geological Survey with respect to the investigation of domestic deposits of essential ores and other mineral substances.

In effect the Strategic Minerals Act imposes additional duties to be performed by the Bureau of Mines, particularly as they relate to exploration of ore deposits. As related to research designed to develop new methods of beneficiation and treatment for extraction of the metals, the act requires an expansion of work in an established field of the Bureau.

Prospecting or exploration will be handled by the Mining Division, and the organization is being built around the present staff of that division. Additional employes are being engaged from the Civil Service registers. Others are not eligible.

In the light of present knowledge, the outlook for disclosing large deposits of deficient strategic minerals of present commercial grade is admittedly not promising. The prospect becomes more hopeful when viewed from the objective of disclosing reserves for strategic purposes, that need not necessarily be of immediate commercial grade but might be commercial under the stimulus of war prices or of strategic value when price would be relatively unimportant. Thus, relatively small deposits of commercial grade may be accompanied by much larger "halos" of lower grade material that contain sufficient quantities of needed metal that could be extracted "at a price."

The act authorizes and directs that investigations be made concerning the "preparation, treatment, and utilization of ores and other mineral substances found in the United States or its territories or Insular possessions * * * to devise new methods for treatment and utilization of lower



WILLIAM LOACH
Chairman of the Session on Minerals and National Defense

grade reserves and to develop substitutes for such essential ores and mineral products * * *." This part of the investigations authorized by the act has been assigned to the Metallurgical Division of the Bureau.

From the nature of the problem and the wording of the act, it is anticipated that the new work will be directed largely toward methods of beneficiating material that can not at present be classed as commercial, first for the purpose of devising methods by which such material could be utilized in a national emergency, and second, in the hope that such material might be raised to commercial grade.

It is hoped that this may be but the beginning of a long-range program permitting a comprehensive and systematic examination of our strategic mineral position, which should include not only the determination of reserves and the cost of production, but also the preparation of complete detailed plans for developing and mining those deposits that may be found to contain substantial reserves, and for the beneficiation and the extraction of the metals from their ores in usable forms.

*Domestic Sources of Deficient Minerals,* By D. F. Hewett, Chief, Metalliferous Deposits, U. S. Geological Survey. Read in Mr. Hewett's absence by H. I. Smith, Mineral Leasing Division of the U. S. Geological Survey.

How shall we approach the problem of the reserves of strategic metals in the United States so as to obtain the necessary data and convey a clear idea to many classes of persons, professional, as well as lay, just how much of each may be produced from time to time, at what price, and for how long? We all know that minerals are a wasting asset and that advances in technology make material of progressively lower grade available at the same or lower prices. Many persons assume, therefore, that this tendency continues indefinitely and that we shall never face shortage or scarcity. A careful review of Europe during the 19th century, as well as our own Atlantic Seaboard, will dispel this illusion.



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The basic data for any appraisal of our resources of the metals are threefold: Geologic, technical, and economic. The geologic data include all of those elements of mineral content which determine grade and recovery; those elements of environmental control, such as the enclosing rocks, sedimentary and igneous, which determine distribution; and those structural features, which determine form and persistence of ore bodies, and finally, in rare cases, even physiographic history which sometimes limits distribution and depth. The technical data include all of the elements of mining methods, which affect recoverability from the ground, and of milling and metallurgical processes, which determine recovery from the mined ore. The economic data include all of the elements that affect price, such as accessibility, markets, and competitive position, since many metals compete with each other and with nonmetals. [Mr. Hewett then summarized the salient geologic features of the deficient metals—tin, nickel, manganese, chromium, tungsten, mercury, antimony and aluminum.]

The foregoing résumé of some of the geologic relations of the deposits of the eight strategic metals indicate something of the program of work that will be carried out by the Geological Survey in its attempt to reveal more accurately the nation's reserves. We shall make some effort to examine numerous recorded and reported deposits of these metals that are not yet adequately examined but we shall lay emphasis on careful, detailed studies of those districts for which existing dependable information indicates a definitely hopeful source of one of them.

Obviously, to accomplish the objectives of the present program, close cooperation of geologists of the Survey with the engineers of the Bureau of Mines will be necessary, both in planning and in the actual exploratory processes. After much discussion about our cooperative activities, it has been decided that the Survey will do most of the reconnaissance examination work and then carry out detailed district studies that will serve to guide the programs of exploration by the Bureau. Final interpretations of the reserve situation will be based on joint review of the evidence obtained. I feel sure that the program of work that we are planning will clear up many uncertainties concerning our reserves in the strategic minerals.

*Revival of Hydraulic Mining,* By George W. Hallock. president, California Hydraulic Mining Association.

It is permissible to doubt that within 50 years any subject even remotely similar to the one assigned to me —The Revival of Hydraulic Mining —has appeared upon the program of any general assembly of miners or mine operators. The explanation of this can be traced in part to a strange combination of circumstances. In 1928 the American people elected to the Presidency for the first time in history, a mining engineer of wide experience, Herbert Hoover. Previously, by four years, the Second Congressional district of California had elected as its representative in the lower house of Congress, Harry L. Englebright, a young mining engineer who had been cradled amid the ruins and traditions and ghostly presences of that same abounding hydraulic mining industry which had suffered effacement.

Thus was born the thought and purpose, that a new and less troublous day might be created for a valuable expedient of mining, discovered by chance in 1853, and which over a period of some four decades assumed immense proportions along the Western Sierran slope, centering the five counties of Nevada, Placer, Eldorado, Yuba and Sierra. No less an authority than Lindgren estimates the excavations of that period at 1,250,000,000 yards and the gold recovery, on the basis of the old price, at well in excess of $500,000,000.

Our organization—now grown, we are told, to be the most numerous in point of membership and the most effective in the matter of conciliatory achievement in California—was formed at Grass Valley in February, 1935, with 33 members.

From the first we recognized that our mission must be one of conciliation rather than combat—that we must convince doubting and potentially hostile interests and groups that our project is feasible and practicable, and that we come not to damage, but to benefit. For it is not to be overlooked that the factor of natural erosion was never fully taken into account in summing up the case against hydraulic mining. Semi-official estimates credit natural erosion with supplying from one-fourth to one-third of the complained-of debris, and in estimating the capacity of the storage dams approximately that differential is reserved for eroded material which otherwise would find its way into the navigable streams.

Of the four projected dams authorized by the Federal Government, one is completed, the North Fork Dam on the American River. Storage capacity 27.7 million yards, of which 2.6 million yards is reserved for storage of natural erosion materials during the period of mining. The height of the dam is 139 feet with a crest of 717 feet. The cost is $646,000. The storage cost to the miners is 2.6 cents per yard.

One is in the process of construction, the Upper Narrows Dam on the Yuba River, total capacity 136.5 million yards. Allocated to miners, 117.7 million yards. The height is 237 feet with a crest of 1,150 feet. The contract price was $2,175,000 with the ultimate cost approximating $3,500,000.

The contract for the Ruckachucy Dam on the middle fork of the American was let only last week, and work will start immediately. The contract price is $643,450. The total capacity is 28.1 million yards: allocated to miners is 24.9 million yards. The height is 136 feet with a crest of 858 feet.

The Bear River project is still indefinite as to height and other details, but with $30,000 available for resurvey.

A factor of which we of the Association are proud is that out of our four years of groping for a trail which did not exist, we have won the confidence and splendid cooperation of that astute body of Army Engineers—the California Debris Commission, of which Col. Warren T. Hannum is president. Too timid to ask for it, we tried to deserve it.

Early we were recognized as the go-between as linking the Government and the operators. And to clinch the matter the President of the United States on one occasion was to add his expression of confidence in our work and our project—a project which has for its paramount purpose not the enriching of a few operators, but the giving of employment to worthy citizens now unemployed and the healing of the ancient breach between the miners and the farmers, thus ushering in a new era of accord and prosperity.

## Prospects for the Metals

*The Prospect for Copper,* By P. G. Beckett and Walter Bennett, Phelps Dodge Corporation.

The demand for copper in this country follows general economic conditions closely, so that in any consideration of the prospects for copper due allowance should be made for changing conditions in business.

At the present time domestic consumers are well covered for the next quarter at least, at about the present rate of consumption. It now appears that general business in this country may improve between now and the close of the year, and although the continuation of war clouds in various parts of the world will have the tendency of holding back any normal improvement which could take place here, it would still appear that the chance of some improvement prevails. It should not be expected that such improvement will take place rapidly, or that the domestic consumption of copper will rise sharply. Domestic stocks of refined copper rose slowly during the first six months of this year, but it may be expected that for the next two or three months at least, this trend will be reversed and domestic stocks will decrease. A decline in domestic stocks of 18,000 tons has already been reported for the month of July.

The market price of copper is now 10½ cents per pound, and considering average prices for previous periods, and also prices of various other commodities, the present price of copper can not be considered high.

Conditions in the world market are quite different from those affecting the domestic market. With the present upset conditions in the world, it can probably be expected that at least for a considerable period ahead, world consumption will continue at a very high rate.

In conclusion, it would appear that the prospects for copper, both domes-

tic and world, over the next few months are for a slowly rising rate of consumption. Increases in consumption usually precede advances in price, and it would appear that the industry will benefit more by an increase in the volume of production and sales rather than by a quick advance in price.

*The Lead Market—First Half 1939*, By Andrew Fletcher, vice president, St. Joseph Lead Company.

Both foreign and domestic prices of lead were remarkably stable during the first half of this year, the New York price fluctuating within a ten point spread—$4.75 to $4.85 cwt.

With the exception of January, when the sales were 29,000 tons, the rate of sales this year has been very stable, ranging from 36,200 to 40,800 tons monthly.

Total stocks of lead, including refined lead, ores and concentrates, bullion, and antimonial lead, amounted to 215,711 tons on July 1, 1939. These stocks at the beginning of the year were 209,956; however, on March 1, 1938, said stocks amounted to 216,070 tons, indicating that over a 16 month period ending July 1, 1939, production and consumption were in balance. The present stocks represent a reserve supply of lead equivalent to about three months' requirements at the present rate of consumption, and are good insurance against any shortage of metal in the event of a sudden increase in consumer demand.

With a view to protecting and enlarging the market for its most important product today, the lead industry launched a program in the spring of 1939 to promote the wider use of white lead in paint. The lead mining industry, by recognizing that the responsibility of the miners towards the use of lead in its many forms does not end with its delivery as concentrate to the smelter, is only doing something which other industries more thoroughly integrated, notably nickel and aluminum, have been successfully doing for years.

Some people believe that a definite prospect of world peace might have a detrimental effect on lead because purchases by governments for re-armament would cease. While some lead is used as war munitions, we believe that with the absence of a general war, and a restoration of confidence in a lasting peace, consumption of lead throughout the world will be accelerated to a point where the peace time use of the metal will far exceed any amount that could possibly be consumed for munitions purposes.

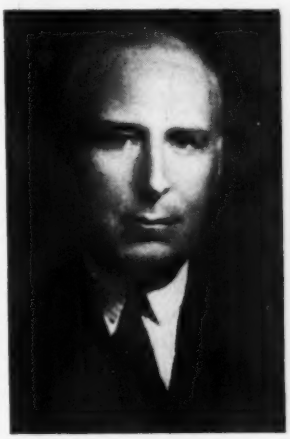
*Resumé of the Zinc Industry*, By Edward H. Snyder, general manager, Combined Metals Reduction Company.

The domestic zinc industry during the nine long years from 1930 to 1938, inclusive, has suffered the adjustment involved in absorbing an average weighted price decrease of 31.3 percent and at the same time a reduction of 31.5 percent in output, resulting in an average yearly gross income of only 47 percent of the average for the five years 1925 to 1929, inclusive.

While domestic production has decreased by 169,000 tons from approximately 625,000 tons in 1929 to 456,000 tons in 1938, foreign production has increased 285,000 tons from 989,000 tons in 1929 to 1,274,000 tons in 1938.

The average gross recoverable value of metals other than zinc in domestic zinc ores is less than half of that in the ores of Mexico, Canada, Australia and India, and about 60 percent of the values of other metals in the ores of Poland, Spain and Yugoslavia. In some cases, zinc has degenerated into a straight by-product metal in connection with the production of lead and the precious metals from high grade complex ores.

High grade foreign ores coupled with cheap labor (except in Canada) are not the only reasons for the large increase in world production, while a large portion of the domestic industry is facing a slow death. The so-called drives for self-sufficiency of metals involving subsidies of various types account for a substantial production of foreign zinc under conditions not controlled by the London price level, but by the abnormal demand for gold due to the shortage of foreign exchange in most nations except the British Empire and the United States.



STANLY A. EASTON
Chairman of the Session on Prospects for the Metals

All factors relating to the foreign zinc situation indicate that overproduction of zinc outside the United States will continue at an average price closely approximating 3 cents per pound London until such time as Europe destroys itself with war or the leading powers agree to policies that will again permit normal world trade.

The duty on zinc was reduced 20 percent on January 1, 1939, from 1.75 cents per pound to 1.4 cents per pound for metal, and from 1.5 cents per pound to 1.2 cents per pound for zinc in ore. With the present United States duty of 1.4 cents per pound and a 3-cent price for zinc in London, the slow destruction of a large portion of the United States zinc industry is inevitable, with further tearing down of the other industries it supports.

Reviewing the previously stated facts, even those not associated with the United States zinc industry should be able to agree that any industry that has suffered an average reduction of 53 percent in gross income over a period of nearly ten years is "sick." It should also be apparent to all that the future welfare of the domestic zinc industry is now controlled not only by the uncertainties of future business conditions in the United States, but also definitely by those in Europe.

Only two possible solutions of our domestic zinc problem are apparent. One is the raising of the world's price level for raw materials by the international adoption of trade and monetary policies that will permit free interchange of goods between raw material producing countries and those depending on manufacturing. Under present world conditions, chances of the adoption of some trade and monetary policies are remote, but until this is accomplished, the only practical solution of our problem is a United States duty on zinc sufficient to maintain (with balanced production and consumption) an average domestic price above the cost of production, including the cost of development and depletion. A duty of 2.25 cents per pound is required. Our battle must continue until it is had.

*Iron Ore*, By R. C. Allen, president, Lake Superior Iron Ore Association.

Naturally an industry so basal to the industrial activities of the country as iron ore, has felt keenly the economic difficulties which have beset the United States during the past ten years. In the decade preceding 1931 we became used to an average annual shipment of 55,000,000 tons per year. During the last ten years the shipments from Lake Superior have been about half of 55,000,000 tons per year. The industry entered this depression period in a comparatively over-developed condition. During these last ten years the mines have been maintained in condition to serve the iron and steel industry at any rate of production which may be demanded of them.

Increased costs for taxes, compensation for injuries, insurance of jobs, old age, etc., and increased costs of administration arising out of legislation and regulation in the states in which we operate, and especially at Washington, have vastly increased the overhead cost of mining. That is the reason why the cost of mining in Lake Superior is today just about what it was, on the average, 20 years ago.

You need have no worry about the future of iron mining in the Lake Superior region. The mines are not to be exhausted in your lifetime or the lifetime of your son or your grandson or his son or his grandson. There is practically an inexhaustible supply of iron ore in the Lake Superior region. However, for 80 years we have been sending down the lakes what we call "cream" ore, which runs 50 percent and up in metallic iron. What are we going to do for iron ore when there isn't enough "cream" to go around? We are going to do just what you folks have learned to do out West: we are going to make rich ore out of lean rock.

The idea arose in my mind that perhaps the mining man is undergoing a metamorphosis. I say that if he has



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become in the last ten years somewhat of a politician the change is in the right direction. While we are busy talking about markets, dealing with statistics and striving for technological improvements in mining, a great many things are happening through political action which are of much more importance to our business. So I think that during the next year, at least, we mining men not only will look like politicians, but will act like politicians.

*Gold—Its Past and Future,* By Merrill E. Shoup, president, Golden Cycle Corporation.

Based upon present available estimates, the gold production of the United States for 1939 will exceed 1938 by at least the same amount as 1938 exceeded 1937. The world outlook for 1939, insofar as production of gold is concerned, points to the same upward trend which has risen steadily from 19,317,961 ounces in 1929 to 37,109,391 ounces in 1938.

The heavy additions to the United States gold stock, both from newly mined sources and importations during the past few years have created considerable fear in the minds of economists and gold producers that the rest of the world might go completely off the gold standard and leave the United States as practically the only large nation remaining on it. This possibility has led to the advancement by economists and other well informed persons of various proposals relative to some form of legislative or executive action which Congress or the President of the United States, or both, should take to preserve and perpetuate the use of gold as the monetary standard of our nation.

Propositions which seem to have gathered considerable support are that the President or Congress, or both, should either take the steps necessary to again return into circulation the vast horde of gold held in safekeeping by the United States Treasury, or else issue gold certificates in payment for newly mined gold produced in the United States and its territories.

The present world chaotic conditions can not continue indefinitely. Sooner or later order and stability will return and the other nations which have or had been on gold standard so many hundreds of years and may temporarily have abandoned it will return to the use of gold. The gold standard, when in force, is the strongest basis for international goodwill and trade, and the world must and will ultimately return to it.

As far as the immediate future of gold is concerned, insofar as its continued value and use as a medium of exchange, complex problems are presented which can produce a series of different answers. Probably no one in the world today can foretell what will happen, and one person's guess is as good as another's. It seems generally agreed that insofar as the United States is concerned, the return of gold into circulation as an actual medium of exchange is a desirable thing. Just how this is to be accomplished and with what methods is the problem to be determined.

The immediate future price of gold is something which no one can forecast with any assurance. One thing is certain, however, gold's value may change, but its acceptability will remain. Gold possesses all the desirable factors which a medium of exchange should possess, and will return to its proper place in the world's affairs as the most desirable and acceptable medium of exchange yet devised by man to carry on the nation's and the world's business.

*Other Metals and Non-Metallic Minerals,* By Chas. H. Segerstrom, president, Nevada-Massachusetts Company.

In these days of wars and rumors of wars, unusual interest is centered in a considerable number of so-called minor metals; many of these are classified as "strategic," and every one of them is of utmost importance to our type of civilization, where speed and accuracy are essential elements; and no modern warfare could be fought without an adequate supply of these minor metals, as well as many of the non-metallic minerals.

The greatest interest in vanadium during the past year was the increased production in the United States. This amounted to 1,613,155 pounds in 1938 as compared with a little over one million pounds in 1937.

Of the world's production of 36,000,000 pounds of molybdenum during 1938, the United States supplied 33,297,000 pounds or 92½ percent of the molybdenum produced in the world. The Climax mine in Colorado, the world's largest producer, supplied 78 percent of the world's output and 85 percent of the domestic output for the year.

The tungsten industry in the United States increased its output from 3,500 short tons of concentrates containing 60 percent $WO_3$ to approximately 3,850 short tons, which was due principally to the fact that in 1937 the price rose very high. Tungsten is listed as a strategic mineral, and supplies will be purchased for a stockpile of this material. In the United States new discoveries have been made in Nevada, California, Utah, Idaho and Washington, some of which gave great promise. The principal new producer has been the United States Vanadium Corporation, a subsidiary of the Union Carbide and Carbon Company, who have reopened the Pine Creek mine near Bishop and have a new mill in operation. Many tungsten mines are closed down waiting for better prices and demand.

Business was slow and demand was light for manganese during most of the past year. This was due to the fact that steel mills were operating on a curtailed schedule and consequent prices were heavy during most of the year. Manganese is classified as a strategic mineral, and as such, appropriations for stockpiles have been made.

The antimony smelting plant at Laredo, Tex., together with by-products plant of the American Smelting and Refining Company and other refineries, supply a goodly portion of the antimony used in the United States; however, the world is still largely dependent on the Chinese metals. Prices trended downward during 1938, while Chinese supplies moved freely for export by indirect routes.

Due to the civil war in Spain and international complications the trade in mercury has been hampered. Mercury is a strategic mineral, and accumulations for the national stockpile will be made in the very near future. Considerable activity is being shown in the development of new properties and the rehabilitation of old ones.

The production of potash in the United States rose to 534,945 tons of salts, equivalent to 316,951 tons of $K_2O$. Our production has exceeded sales and the producers have had to carry over some stocks. The output of the American Potash & Chemical Corporation of Trona and the United States Potash Company and the Potash Company of America near Carlsbad, N. Mex., comprised over 98 percent of the domestic production.

The production of aluminum has remained fairly constant, but consumption has decreased about 47 percent. The production of bauxite has also decreased. The principal supply of bauxite comes from Arkansas, Georgia and Alabama. As usual, the United States continues to be the principal producer and consumer of aluminum. Aluminum has been classed as one of the strategic minerals by the Army and Navy Munitions Board.

Export and domestic demand for phosphate rock appears to have become stabilized. Shipments from domestic mines averaged 4,000,000 ton level to 3,860,476 tons during the year. Prices for phosphate rock remain unchanged. Recently a slight increase has been reported.

Demand for sulphur has been lower, which is in exact ratio to the lower demand for all industrial products. Prices remain practically constant. During the past year production decreased 13 percent from the record total in 1937. The price of sulphur was reduced in 1938—the first change in quotations since 1926—from $18 to $16 per long ton.

Considerable curtailment in fluorspar mining in the past year was recorded. Domestic shipments have been the lowest since 1933 and imports the smallest since 1935. Great improvement has been made in the commercial flotation of fluorspar. Additional plants are under construction, including a flotation method.

In conclusion, I want to emphasize the growing importance of the industrial minerals and by-products of the metal and mining industry. In the past, a great deal of this material has gone down the tailrace and was lost. Now, as the result of experiments in flotation, magnetic separation and other processes, these metals and minerals are recovered. Metallurgists and chemists have made important discoveries, and research has shown the way to secure lower costs and better products.

*The Future of Silver*, By Hon. Key Pittman, United States Senator from Nevada.

When I had the pleasure and honor of addressing this Mining Congress at Los Angeles a year ago, I was urging those engaged in the mining industry to stand together or they would continue to fall together. They had not stood together, to my knowledge, since the beginning of my experience in the United States Senate 26 years ago. The copper men stood together, the lead men stood together, the zinc men stood together, the gold men stood together, but nobody stood by silver. That has all changed now. Every bit of it has changed. You have stood together during the last session of Congress and you proved what standing together means.

For the first time in 68 years you have the coinage of American silver at 71 cents an ounce without the discretion of any one or the interference of any department on earth, and in my opinion that price can never be reduced, nor that law ever changed, unless the price be increased, and I think it will.

Our fight at the last session of Congress was not a monetary fight. It was purely an economic fight. We had to prove the facts. We had to prove what would happen. And then, when our proof was not accepted there was but one thing to do and that was to make a last desperate fight to take the price of silver out of the hands of the bureaucracy of the United States, and we did it by a very narrow vote. Let me say to you that had not the mining fraternity universally stood behind us in that fight it would never have been accomplished.

For 26 years I have watched the parliamentary practice of those two bodies. To kill that conference report meant the end of the legislation, because the conferees of the House had been discharged. That would have required the introduction of a new bill. It would have to pass the House, come to the Senate. Do you suppose that ever again I could have gotten those violent opponents of silver on both sides of the chamber to vote again for our silver amendment? No! No! They knew they never had a chance with their side of it, and we would have never had another chance on our side. That is the present situation with regard to silver.

Now what is the future with regard to silver?

I introduced this last session, and referred to the Banking and Currency Committee, a bill to coin American silver at $1.29 an ounce, the monetary value. That fight in the next session of Congress will be a monetary fight. The last fight was an economic fight. I intend to take up but a very few minutes of your time discussing the future monetary fight, but I can say to you that the Rocky Mountain Metals Foundation, which was established a little more than a year ago under the direction of Mr. Walter E. Trent, has assembled facts which are absolutely conclusive. For the first time in 50 years the statistics of the various departments have been coordinated, and the relation of one metal and one commodity to another has been brought out by proper comparative graphs.

With all this subterfuge with regard to money, did it ever occur to you that silver is now and always has been the one metal in every great war? Does any one deny that during the World War, without government action of any country whatever, silver rose steadily until it reached the price of $1.29 an ounce. And just on the threat of this war, silver is going up in London now, although our government is not buying any silver. And yet it is a worthless commodity!

Credit should not control money. Money is a government function. Credit is the function of those that lend. They should be kept separate and distinct at all times.

If there is no question of inflation involved, and silver money is sound, then there is left only the question of seigniorage which is charged to manufacture of silver into coins. Today the Government charges us 45 percent, or 58 cents an ounce, leaving the producer 71 cents out of the 129 cents an ounce, the monetary value of the silver in a dollar. I have introduced a bill to require the Government to charge only 2 cents an ounce to coin American silver, leaving the producer $1.27 an ounce. The Government can not justly make creditors accept a dollar on a basis of $1.29 and circulate it at that value and deny the same value to the producer.

## Operating Progress

*New Equipment and Improved Practice in Metal Mining*, By Lucien Eaton, consulting mining engineer, Milton, Mass.

Advances in mining practice and equipment have been retarded by all those forces that have deterred the investment of capital—excessive and punitive taxation, government interference with private enterprise, a bad labor situation, and a questionable fiscal policy. At the same time keen competition and the instinct of self-preservation have stimulated the creative impulses of both operators and manufacturers. Except in gold mining relatively few properties have been opened and equipped, and new construction has been mostly in the line of improvements at existing plants. As a consequence new ideas have been put in practice slowly.

Perhaps the most spectacular change in open pit mining is in transportation.

Trucks or tractors and trailer - wagons have replaced locomotives and cars in most of the new installations, except where the haul is long. There have been a number of installations of convevor belts for transporting ore from open pits. A new departure in stripping mines is the use of the carry-all scrapers, hauled by tractors, for moving sand and gravel.

GUY N. BJORGE
Chairman of the Session on Operating Progress

Changes in underground mining have not been as marked as in open pits. The trend is generally toward more selective mining, and may be noted in increased values per ton reported by some of the larger mining companies. The change has been made by more careful placing of poles, whereby lean material is left in place, rather than by discarding lean material after it has been broken, although both practices are followed. With the same object in view, changes in shrinkage stoping to cut-and-fill continue to be made, in order to reduce dilution from the vein walls.

In pumping an increase is to be noted in the use of deep-well centrifugal pumps for draining overburden before stripping or shaft-sinking, and also for unwatering mines. In shaft-sinking an air-driven centifugal sump-pump, throwing to an electric centrifugal pump, set on the shaft timber 20 to 40 feet above, has taken the place of suction-hose and sinking-pump. It is less noisy, takes less room, and is more convenient.

Loading in large drifts and tunnels is still divided between shovels and scraper-slides. A new type of slide has two stationery booms in front, one for each corner of the breast. A tail-block it attached to each boom, and a triple-drum hoist with two tail-ropes is used. By varying the tension on the tail-ropes the scraper can be set down at any desired point in the breast, and drilling eye-bolt holes is eliminated.

The use of detachable bits continues to increase, and of late greater attention has been paid to bit design, resulting in much longer bit-life. The best method of sharpening detachable bits remains undecided. One group of users prefers wet grinding hard bit and another prefers to anneal the bits before grinding and to reharden them afterwards. A third group believes in hot milling.

In most of the large mines electric cap-lamps have been adopted as standard. Until recently only two kinds of reflectors were furnished with these lamps, one of which concentrated the light in a very narrow beam and the other diffused it over a wide angle. The Bureau of Mines has experimented with reflectors giving different light densities, and it is now possible to get reflectors that will give satisfactory illumination under a variety of conditions.

Controlled ventilation is now recognized as essential at all large mines, and the

use of fans and air-doors is as common now as it was rare 20 years ago.

Much progress has been made in the prevention of silicosis in underground workers. Good ventilation is still considered to be the first requisite. Dust-catchers have succeeded in reducing the dust produced in drilling, and an increase in the amount of water passing through the drill-steel or sprayed on the collar of the hole has also been helpful.

*The Morenci Pit,* By H. M. Lavender, general manager, Phelps Dodge Corporation.

A condensation of articles previously prepared by the Morenci operating personnel, copiously illustrated by slides, bringing up to date the progress made in preparing the Morenci project for initial production.

By means of underground workings, churn and diamond drilling, carried on over a period of many years, the existence of the low grade porphyry ore body now known as the Morenci Open Pit was established. It has been determined by diamond drilling, churn drilling and through underground development that there are 284,000,000 tons of milling ore in this pit area, which will assay 1.036 percent copper.

The total amount of waste, both stripping and interior, which it is estimated must be removed, amounts to 239,000,000 tons. This will give a final ratio of 1.04 waste to 1.00 of ore. The maximum thickness of the barren capping is 500 feet, with an average thickness of 216 feet; the thickness of the recoverable ore is 850 feet.

Present operations at the Morenci open pit have been geared to a five-year development program which calls for the removal of 43,000,000 tons of waste, and the operation of the test pit for the delivery of 500,000 tons of ore to a pilot mill at the rate of 1,500 tons per day. Now, in the second full year of production, a total of nearly 13,000,000 tons of material have been removed, the bulk of which has been used to make railroad fills.

The standard shovel in use at the Morenci Open Pit is a full revolving electric power shovel operating on 2,300 volts, equipped with either a 4½ or 5½ yard dipper. Primary haulage is performed by trucks of 22½ yard capacity, initially powered by gasoline engines. The total weight of truck and load, all on pneumatic tires, is in the neighborhood of 60 tons. The average haul at the present time is around 4,300 feet. As much of this is over grades averaging 10 percent, the truck service is of the most severe type.

Following the first operations involving the exclusive use of dump trucks, the mine will gradually be converted to railroad haulage, except for the uppermost benches where waste disposal is particularly adapted to the use of trucks. The transportation system has been laid out so that 85 percent of all material to be mined will move over flat or favorable grades. The average length of ore haul between the pit and the mill assembly yard will be about two miles, of which approximately one and one-third miles will be over a 0.4 percent grade.

Simultaneously with preliminary open pit, railroad and initial plant engineering studies, laboratory test work was conducted on representative ore samples produced by underground mining methods. These test operations and subsequent laboratory flotation test work resulted in the decision to treat the Morenci open pit ore by concentration using flotation.

The material smelted at Morenci, except for the necessary flux ores and a small amount of precipitate copper, will be flotation concentrates. Preliminary plans for smelter design indicate the desirability of using a wet charge method for the smelting of these concentrates.

The site chosen for the location of crushing plant, concentrator, power plant, smelter, smelter machine shops and other buildings necessary to the operation of the plant is located approximately 2¼ miles from the open pit. The area selected provides sufficient room for all units to be erected under the present program, with ample space available for future expansion.

Present plans call for the completion of the Morenci plant by January 1, 1942, with provision for an initial capacity of 25,000 tons per day.

*Progress in Milling Practice and Equipment,* By A. W. Fahrenwald, dean, School of Mines, University of Idaho.

There has been progress by long and rapid strides, and almost every day mineral technology is on the march. In view of the ever increasing difficulty of showing profit at mining, the engineer, for his own survival, has had of necessity to reduce operating cost, recover more, and make better products.

In a general way, the continuously improving technology is the result of operations primarily on four fronts. First, and in my opinion of greatest importance, research and testing in the laboratory; second, ingenuity in setting up flowsheets and devising processes; third, improved equipment; and fourth, availability of better materials and methods of fabrication.

The capacity of the operating engineers to concoct ingenious flow sheets and pulp treatment sequences has been outstanding. Results of this type of engineering in the form of increased profits are to be seen in the concentrating plant, in the leaching plant, and in the smelter.

In the coarse crushing range, probably the outstanding development of all time was the long-stroke, high-velocity-of-hit, cone crusher. This crusher, requiring controlled feed, by virtue of its principle of action, produces a minimum of undersize.

Trends in ball mill grinding have been toward larger discharge ends, higher speeds, smaller ball and pulp loads. Mill speeds above critical, while shown to increase materially mill capacity, resulted in excessive liner wear.

The jig and the table, both old-timers, but dressed in modern designs, are finding regular and increased use in the mill-classifier circuit.

Flotation has made astounding progress. For this, research is largely responsible. Not only can most minerals be floated, but flotation has played roles in other ways than merely to concentrate. In one type of milling, flotation actually performs as a classifier—a type of classification, however, impossible of attainment by use of water or screens.

## Labor Problems

*The Wagner Act and the Mining Industry,* By Donald A. Callahan, Wallace, Idaho.

The Labor Relations Act of 1935 marked an attempt to adjust labor relations throughout the United States which is still on trial. It was and is designed to bring about a situation by means of which employers and employes may meet upon a common ground to determine the conditions under which they shall carry on their relationship without undue advantage to either party. With the objectives of this law no one who desires a more harmonious relationship in industry can possibly quarrel. Like most grandiose attempts to work out ideal conditions, however, there is still much to be desired in the actual operation of the law.

The employer who believes that all efforts to better the condition of the working man through organization must be resisted is not only an enemy of society—he is an enemy of all other employers. The man, temporarily in a position of authority in a business organization, who feels that it is his duty to exact the last pound of effort from those who are temporarily subject to him, is doing his part to bring about a class consciousness which in the end will destroy Christian civilization.

The Wagner Labor Relations Act does not conduce to harmonious relationship between men and management. That is due to several reasons: (1) The act is founded upon a false promise. It seeks to erect a barrier between management and men because it recognizes something which does not exist, that there is a class distinction between employer and employe; (2) this one-sided law, having been enacted and notice having been served that there is a class struggle and that the Government has definitely taken sides in it, it naturally follows that those who were appointed to administer the law were selected because of their entire sympathy with that point of view; (3) there seems to be a presumption upon the part of those who administer this law that employers will resort to almost any means to keep their employes in subjection; (4) the act further places an absolute ban upon the expression of opinion by an employer; and (5) the procedural features of this act are apparently designed to place employers of labor at a disadvantage by removing any safeguards which centuries of experience have placed about

those who are accused of wrong doing.

Then, again, a practice has grown up of introducing the case of the Government and then changing the complaint to fit the testimony which has been offered.

Certain amendments to the Wagner Labor Relations Act have been offered in Congress, and the committees of both House and Senate have been hearing testimony. With most of these amendments the mining industry is in hearty accord. It has presented witnesses before the Committee on Education and Labor in the Senate and has presented its case. It has asked that committee to consider amendments to the act which will:

1. Provide a nonpolitical board which will represent labor, employers, and the public.

2. Provide for a truly voluntary choice of representation and protection from interference, restraint or coercion from any source.

3. Provide that an employer may confer with, counsel or advise employes orally or in writing about any matter within the scope of the act.

4. Provide that certain practices of labor organizers and labor organizations shall constitute "unfair labor practices" with a view to protecting employers from situations such as were described by practically every witness appearing before the Senate Committee on behalf of mining employers.

5. Provide for limitation of the discretionary power of the board in the selection of bargaining units, and compel the board to accept the wish of a majority of the employes.

6. Provide a democratic method of choice of representatives and a free expression of the will of the employes and a prompt determination of representation questions.

7. Provide that either an employer or a minority of employes may raise the question of representation and secure prompt determination.

8. Provide for procedural changes that will conform with those embraced in section 10 (b) of S. 1264, introduced by Senator Burke. Such an amendment will in my opinion result in the elimination by agreement of many points of controversy and will result in harmonious adjustment of differences without the intervention of hearings by the board or its agents.

9. Provide for a requirement that findings of fact must be based upon the weight of evidence, and that conduct of hearings shall conform more nearly to established procedure in courts of law.

I believe in organized labor and the right of collective bargaining. I denounce any attempt upon the part of management to coerce employes or to prevent them from joining any labor group which they feel will benefit them. I denounce espionage as unfair, and believe that it is a fruitful cause of labor unrest and lack of confidence in management. I believe that the great majority of mine operators subscribe to these views. In a spirit which recognizes the dignity of human labor and accepts it as a full partner in our common enterprise let us demand of our Government fair and equal treatment in the handling of labor disputes and a recognition of the mutual responsibility of management and labor in the promotion of peaceful, harmonious relations in a great common enterprise.

J. C. KINNEAR
Chairman of the Session on The Fiscal Situation; Wagner Act

### *Discussion*

D. P. STRICKLER, president, Cripple Creek Mining and Development Company. Quoted one trial examiner of the Labor Board as saying he did not propose to follow a decision of the Circuit Court of Appeals because he did not consider the decision "either legalistic or realistic." When these administrative bodies reach the point where they refuse to be bound by decision of the court, it is time to take their powers away and place them under the court.

HERBERT L. FAULKNER, counsel, Alaska Miners Association. Labor itself is menaced by the existing law and the manner of its administration. If the board can be unfair to employers, a different board composed of men opposed to organized labor could be just as unfair to labor organizations. Such a shift in attitude is not beyond the realm of possibility, particularly in view of the public revulsion against the act, which is being revealed in the form of stringent state laws limiting the rights of organized labor. Ultimately there must come a redefinition of interstate commerce and a return to the states of some of the powers which have been taken over by the central government in recent years.

ROSS D. LEISK, general manager, Sunshine Mining Company. Virtually all labor cases follow the same pattern—the filing of a complaint; the search for a labor spy; a search for a company-dominated union, etc. Numerous incidents in a case against the Sunshine Mining Company were related.

*Application of the Wage-Hour Act to Mining*, By Elmer F. Andrews, Administrator, Wage and Hour Division, U. S. Department of Labor. Read in Mr. Andrews' absence by Wesley O. Ash, regional director, Wage and Hour Division, San Francisco, Calif.

What is it that you employers of labor really want? I suppose you want a variety of things; but so far as labor relations are concerned, I think I am correct in saying that you want dependable, healthy and efficient workers.

So far as the metal mining industries are concerned, I don't think you have been having any difficulty about the minimum wage requirements of the law. I don't suppose any member of this Congress within years has paid as little as 25 cents an hour, or even as little as 30 cents an hour—the standard which becomes effective in October. However, some of you are having trouble with the maximum hours provision. And because you are having some trouble about hours, some of you may have leaped to the conclusion that the law itself is unsound, or that it ought to be amended so as to make a special exemption for metal mining.

In a general way, I am familiar with the arguments. Many of the mines, especially the smaller ones, must be operated continuously if they are to show a profit. To add an additional shift would be economic suicide. The cost of subsistence in the mining camps for additional workers would be prohibitive. Moreover, if working hours were shortened, some of the men might stray away on their days off and never come back. To pay time and a half for overtime in excess of 44 hours a week (42 hours after next October 24) would be prohibitive. Moreover, the men themselves don't want either a 44 or a 42 hour week.

The ease with which employers have been able to read the minds of their workers, to tell us exactly just what they do or do not want in the way of hours and working conditions, has deeply impressed me. But the curious thing about it is that the workmen themselves haven't told us these things.

As a matter of fact, we have received communications from the representatives of the miners that they support the law, have benefited under its provisions, and do not want it amended to provide exemptions for the industry.

We ventured to suggest one method by which, it seemed to us, it might be possible to meet the working requirements of the industry without hardship as to the overtime payment requirements. We pointed out that the law is flexible. We suggested that the workweek might be fixed so that an employe may work 11 consecutive days of 8 hours each and then lay off three days.

Some of the mine operators have found that our suggestions do give them a way out. Naturally no single plan that we can offer will fit the practical needs of every mine operator in the country.

I am not one of those who maintain

that the wage and hour law is perfect in every detail, that it cannot be improved in a single sentence or by the subtraction of a single comma. However, industries seem to be getting along without benefit of special privileges and exceptions, and some that last autumn were cocksure they would never survive under the Fair Labor Standards Act obviously have adjusted their operations to the new order of things and are not having the trouble they anticipated.

I should regret to see any ill-considered changes in the Fair Labor Standards Act. Almost every industry can make out some sort of a case against certain of its features.

Are we to conclude now that the necessity of snipping a couple of hours off the workweek is so great an obstacle to our expanding enterprise that we must helplessly surrender before it? Of course not. We will take it in our stride and march on to new conquests over poverty and disease toward that bright day when all men shall share more abundantly in the riches of our continent.

***Discussion***

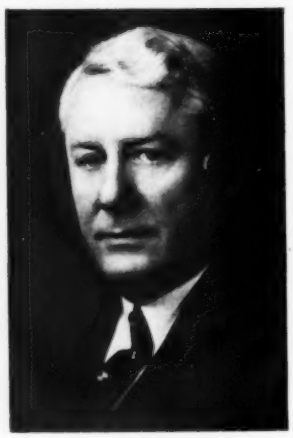
C. A. DYE, president, Tendoy Copper Queen Syndicate. If the wage-hour administrator would visit small, isolated camps in Idaho, he would hear plenty of objection to the hour provision from the workers. Many of the small operators are using family labor and ignoring the wage-hour law. Many of the workers look upon the hour restrictions as the" did prohibition—an interference with their personal rights. Some of the company's employes have asked for the privilege of working seven days a week. We are asked to give facts and not arguments. But we are given arguments and not facts. And when we reply with arguments, we are met with sarcasm such as the administrator's paper employs. What we need is less swinging of clubs at the head of all business. Given a little encouragement, business will pick up the slack before the Wage and Hour Division finds out what it's all about.

JOSEPH W. WALTON, vice president, Hillside Mines. Described the troubles of a small operator with the Wagner Labor Relations Act, the Wage and Hour Law, and other regulatory measures. Urged the industry to work for the exemption of all mining from the provisions of the wage and hour administration.

LEVERETT DAVIS, vice president, Cornucopia Gold Mines. Complimented the administrators of the act, but attacked the law itself. It has reduced the earnings of the average mill worker from $35 down to $29 per week, and some skilled workers from $52 down to $40 per week. Wished that Mr. Andrews could sit in his office when these men come in to complain about their reduced earnings. Some of them have sons in college, and they just can't meet the expense under the reduced hours and reduced weekly income. Certain categories of business in his community which are very much in favor of the law include the saloon keepers and pool-hall operators.

PAUL HUNT, manager, Park Utah Consolidated Mines Company. The law has increased operating costs by at least 25 percent, reduced efficiency at company's mine, and generally reduced the weekly earnings of the miners. The workers would like the law if it resulted in a reduction of hours and no reduction of earnings. But the industry can't stand that. The miners are now getting five days' pay instead of six, and I would like an impartial poll to see just what the miners think about it.

IRVIN E. ROCKWELL, president, Idaho Mining Association. Advised the administrator to make a canvass



D. M. KELLY
Chairman of the Session on the Wage-Hour Act

of the wives of miners who are working the reduced hours. If he will do that, he will find plenty of complaints.

HERBERT L. FAULKNER, counsel, the Alaska Miners' Association. The hour restrictions simply will not work in the isolated camps of Alaska. Our operations are seasonal and the men earn enough in a few months to keep them through the year. We have to work when the sun shines and water runs, and we have to work more than 40 hours a week during that period. Administration of the act has been reasonable and moderate, but the law is unworkable and should be repealed. There is nothing sacred nor unchangeable about any law, and the only way to treat this one is to repeal it and leave such regulations up to the states.

BURT B. BREWSTER, publisher, *Salt Lake Mining and Contracting Review*. The mystery of no complaints from the workers is perfectly clear. Mr. Andrews consults none but the paid representatives of the mine and mill workers.

## Health Problems in Mining

*A Critical Review of Occupational Disease Legislation*, By Theodore C. Waters, attorney at law, Baltimore, Md.

The occupational disease compensation laws that are now effective in the various states are not uniform, but there are certain basic principles underlying them which are common to all.

In drafting legislation, consideration must be given to the scope of the law. The law, using the "schedule" plan, may provide compensation for certain named diseases, or using the "general coverage" plan, may provide compensation for any and all occupational diseases.

The sole reasoned objection to the schedule method is that new diseases may develop from the perfection of new industrial processes and the use of newly discovered chemicals and gases or their compounds, for which compensation would not be provided.

The advantage of the general coverage law is that it makes compensable all occupational diseases, if we know what we mean when we use the term "occupational disease." Some laws attempt to define this term, but after careful study, I have yet to find a definition that is satisfactory. Other laws do not define the term which is, therefore, left to judicial interpretation.

The diagnosis of occupational diseases and the evaluation of the resulting disability have been so difficult and the cause of so much dispute that most of the state laws make provisions for medical boards to assist the administrative agency in its determination of the medical questions involved in claims.

The prevention and control of occupational disease injuries is and should be the goal of everyone interested in the subject of industrial hygiene. Economically, prevention is preferable to compensation.

You have all heard of silicosis and the problem that it has presented to industry. I believe that that problem has been grossly exaggerated. I do believe that there is far less disabling silicosis in industry and in mining than has heretofore been popularly believed, and it is with respect to the disability of employes resulting from silicosis that the most difficult legislative problems are presented. Legislative provisions are necessary in order to avoid the imposition upon industry of unjust compensation costs and to award proper and just compensation to those who may be injured.

The primary purpose of workmen's compensation legislation is to provide compensation for actual disability. Silicosis is disabling only when accompanied by active infection, and many of the states have adopted legislative provisions denying compensation for partial disability.

In my judgment, provisions denying compensation for partial disability from silicosis should be included in any proposed compensation law until some competent and approved method of evaluating partial disability has

been recognized and accepted by the medical profession.

Some method should be devised to permit the employer to absorb that liability over a period of years after the act becomes effective. This has been done in many states by a method of progressive liability limitation.

A subject that has not received the legislative consideration that has been merited is that of apportioning disability when a compensable injury is aggravated by disease following such injury or when an occupational disease is aggravated by another disease or infirmity not in itself compensable.

*Air Hygiene in the Mining Industry*, By Leroy U. Gardner, M.D., director, Edward L. Trudeau Foundation, Saranac Laboratories.

Like all higher animals, man has evolved in an environment polluted by variable amounts of dust. As a consequence he has developed mechanisms which prevent his lungs from becoming clogged with foreign materials which would interfere with their proper function. But industry has thoughtlessly created such high concentrations of dust in the atmosphere that the protective devices fail and dust often accumulates inside the lungs.

Mining is one of the oldest industries where hazards of this kind have occurred, largely because of the lack of ventilation.

Today prevention remains the only reliable means of combating silicosis. Others in this audience are experts in the use of water, ventilation and respirators to prevent dust from forming and reaching the lungs of miners. The physician's part in prevention is equally important. His findings in the lungs of exposed workmen are proof of a hazard. He can select individuals free from infection and otherwise capable of withstanding exposures to dust. He must detect evidence of complicating infection and determine whether disability exists. He must decide where men with different degrees of pulmonary involvement should work. His is the responsibility of controlling the spread of infection, which means supervision of not only the workmen but of the entire community in which they live.

New methods of control are under investigation, but they are still in an experimental stage. The discovery that other minerals associated with quartz in atmospheric dust will modify its action has led to detailed study of their influence.

In the writer's opinion, the study of the inhibitory action of aluminum is a fertile field for investigation. The presence of this element in siliceous rocks may explain some of the paradoxical lack of reaction to dusts of high free silica content. But the influence of aluminum has not yet been investigated sufficiently to warrant its use in place of the better-known methods of prophylaxis.

While enough knowledge has now accumulated to control silicosis in many industries, there are still essential details that are lacking. The discovery of an adequate method of treating the tuberculosis which complicates silicosis would be an achievement of major importance. To establish equitable codes of permissible atmospheric dust concentrations, much more must be learned about the physical behavior of mixtures of silica and other mineral particles in air-borne suspensions.

F. S. MULOCK
Chairman of the Session on Health Problems in Mining

## Tariff

*Experience Under the Reciprocal Trade Agreements*, By Hon. Edgar B. Brossard, member, U. S. Tariff Commission.

The rates of duty on which our Government has made concessions in the trade agreements now in force apply to almost 1,200 categories of imports, or about one-third of the rates in the act of 1930. That is about the same number of rates as were raised in the tariff revision of 1930. The decreases do not cover all of the items increased in 1930, nor have the reductions been calculated to offset the increases; it is just an interesting coincidence that the number of changes have been about the same. The rates of duty applicable to two-thirds of the total number of tariff items contained in the Tariff Act of 1930 have not been modified at all by the existing trade agreements.

Nine or ten reductions in rates of duty on metals other than iron and steel have been made in the trade agreements in operation. Most important changes have been in manganese ore, ferromanganese, ferrochrome, brass and bronze tubing, lead pigments, and zinc.

The rate of duty on manganese ore in the Tariff Act of 1930 is 1 cent per pound of manganese content. For the usual ores imported, this amounts to about $11 a long ton. The Brazilian trade agreement, effective January 1, 1936, cut this duty in half, and the benefit of the cut was extended to all the principal producing countries. The effect of the reduction in duty on the quantity of imports or on prices cannot be definitely traced because the pickup in industry has been such as to dominate other factors. Domestic shipments as well as imports have increased since the cut in duty.

The duty on lead in ore is 1½ cents and on pig lead 2⅛ cents per pound. No trade agreement has affected these rates. Reductions were made in the duties on lead pigments in the agreements with Belgium and the United Kingdom, but imports of pigments have been only about 3 percent of domestic production of pigments, whereas exports of lead pigments have been twice that quantity. Imports of pigments have been largely from the United Kingdom, Germany, and Austria, with Belgium a minor negligible source since 1934.

Zinc—Imports have ranged from 3,000 to 15,000 tons, largely as ore, except in 1937 when 37,000 tons came in. Exports exceeded imports for many years, the excess dwindling from over 100,000 tons in 1925 to 4,000 in 1930 and to 1,000 in 1934. Beginning in 1935, exports have been less than imports, the excess of imports over exports averaging 6,000 tons per year, except in 1937 when it was 33,000 tons.

The 1930 duty rate is 1.5 cents per pound on zinc in ore and 1.75 cents on zinc metal. The second trade agreement with Canada, effective January 1, 1939, reduced each of these rates by 20 percent, the reduction extending to all principal foreign suppliers except Germany. The domestic zinc industry has lost some of its exports and has complained that the reduction in duty has aggravated the serious condition of the industry by preventing a price recovery to more satisfactory levels. Imports of zinc in the first five months of 1939 were greater than in the entire year 1938.

In conclusion, it might be well for us to remember that in dealing with these economic questions like foreign trade, in which so many factors are involved, it is difficult if not impossible to isolate and measure precisely the effects of a specified change made in a tariff rate. It is more difficult still to forecast what the effects may be in the future.

Experience is the only real test, and with experience it is possible to show only the general results of the combined economic factors. Only in a general way is it possible to evaluate the results of specified tariff changes. That is one of the reasons why, in a republic like ours, the tariff is destined to continue indefinitely to be a public question needing careful consideration of all citizens.

### *Discussion*

HOWARD HUSTON, American Cyanamid Company, New York City. As regards the reciprocal trade agreements, I find many questions floating about in my mind. So perhaps the best contribution that I can make to you is to present publicly some of those questions which are bothering me and which may, perchance, be bothering you also. Let me, however, state at once that I do not necessarily expect to receive replies to them.

Let us admit at once that foreign trade is essential to the well-being of



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a modern nation. This is essentially true of the United States as there are a number of commodities which, as rubber, silk, coffee, tea, tin and nickel, that this country does not produce. These products are necessary to our modern civilization. Therefore, we must buy them from other areas of the world.

In like manner, this country produces materials such as cotton, tobacco, automobiles, various minerals, and many other farm and industrial products which are needed by others. We have capacity in men, land, and plants to produce more of these commodities than we can consume. We must have foreign markets in which to sell these surpluses if our men, land, and plants are to be employed. Therefore, foreign trade is essential to our prosperity.

J. F. McCARTHY
Chairman of the Session on Tariff; Mine Financing

Mr. Huston then elaborated on the following questions:

(1) Is it not perfectly clear that the results expected under reciprocal trade agreements did not materialize?

(2) Is it not perfectly clear that the reciprocal trade agreement programs have not stimulated exports, least of all exports of agricultural products?

(3) Is it not perfectly clear that the trade agreement program did result in stimulating quantity of imports and at the same time, did it not have a very definite result in lowering prices, a policy directly contrary to all of the other Government schemes to restore prices to pre-depression levels?

(4) Has this program which we are considering done anything at all to help us regain our foreign market for cotton?

(5) Has the reciprocal trade agreement program helped the zinc industry and has not that industry suffered a tremendous loss as the result of this agreement?

(6) Have these trade agreements brought about genuine reciprocity of a kind which is actually helping the United States back to prosperity?

(7) Does the present policy fully take account of the difference in production costs of American and foreign producers, including wage scales and other cost factors, and does it place America in a position to meet this foreign competition?

(8) Has the United States in any of the trade agreements which it has entered into protected the citizens of this country from exchange control manipulation?

(9) Does it not, therefore, stand to reason that if foreign products are permitted to be sold in our market below our costs it cannot do other than create idleness among our workers and prevent the reemployment of those presently unemployed?

HOWARD I. YOUNG, president, American Zinc, Lead and Smelting Company. Although the reciprocal trade agreements law authorized the President to revise tariff schedules upward or downward, all revisions to date have been downward. This is in direct conflict with most other governmental policies, which are designed to restore the price level prevailing in 1926. Reduction in the duty on zinc and zinc products effected in the Canadian trade agreement has been a crippling blow to the zinc industry in this country. A large increase in zinc imports this year may be directly attributable to the tariff reduction. Natural resources industries must have sufficient protection to compensate for the higher production costs in this country.

## Mine Financing

*Financing Primary Mining Ventures,*

By Carl J. Trauerman, president, Ruby Gulch Mining Company.

In trying to find out what is the matter with primary mine financing today and how to remedy it, let us not fool ourselves with the common complaint that the SEC is to blame, or that something else is the chief cause. There are many causes to blame.

The problem before us is similar to a long hurdle race, where the course is rather unique. Our track set-up contains three full-sized hurdles, one half-hurdle and one hurdle that may or may not entirely disappear during the race. The hurdles represent obstacles in our way for which we are not responsible in most cases. After the hurdles are jumped, there is no smooth straightaway to the finish, but rather a rough irregular track, for which we in the metal mining industry are in a measure responsible and which we can strive to make into a smooth straightaway.

Hurdle No. 1—concerns federal, state and other taxes to which the mineral industry is subject and to which prospective investors in primary ventures are subject.

Hurdle No. 2—this is the half-hurdle mentioned before, and covers the Wagner Act and the little Wagner Acts in the several states.

Hurdle No. 3—the Wages and Hours Act. This certainly is a full-sized hurdle to the primary mining ventures, especially those in small camps, distant from the bigger municipalities.

Hurdle No. 4—mining loans from the Reconstruction Finance Corporation. While we realize that the RFC is more or less of a banking institution, we believe their loan qualifications to mines should be a little more liberal. They have taken greater risks in other industries than they have in the mining industry.

Hurdle No. 5—the Security Act of 1933 and the Securities Exchange Act of 1934, administered by the Securities and Exchange Commission, known as the SEC.

This is the hurdle that I referred to when I stated that it might disappear during the race. There is no question in my mind that, in the long run, for honest promoters, the SEC is a good thing, and to those of us who can live through the "getting used to it" period, it ultimately should prove a real boon to the financing of primary mining ventures.

The SEC laws and regulations have both their good points and their bad points, but, if a few restrictive features are removed, I am of the opinion that the good points far outrank the bad points.

The new Mining Unit, established in the SEC, is not helping us much with its present set-up, and I cannot see where we are any better off with this Mining Unit than we were before.

The word "underwriter" in the Act of 1933 is a misnomer, according to the common conception of that word, and misleads the public more than it does the issuer. Few primary mining ventures are underwritten. The word should be changed to "distributor."

In regard to the enforcement division of the SEC, we suggest that the SEC go a little more gently with its stop orders. A stop order may not harm a going concern, but is like an injunction when placed against a primary mining venture.

We must clean our own house of crookedness, inefficiency and greed, and we can do that by concerted action. The SEC is a great help in cleaning out the crooked promoters and we can aid them, by concerted efforts, in this phase of cleaning our house.

One of the greatest needs of the metal mining industry, both primary successful ventures, is a public relations unit to give honest publicity to the metal mining industry and the users of the metals. Concerted efforts should be made to establish this publicity unit for the western states, with branches in each of the mining states to furnish information to the central unit.

Primary mine financing is today in a drastic and unusual condition, and that is why I have proposed some drastic and unusual remedies to stimulate new mine developments. No matter how secure some of us may feel today, if we are to perpetuate the mining industry we must finance new developments.

If we all pull together along the lines suggested, some day when the sun sets in the west, and the world knows that's all that ever does set in the west, as the rest of us all are up and doing; society will again restore the initiative and courage of the pioneer mining man, and he can say with confidence, "I have raised the

money to prove up and have taken out at a profit the 'gold in them thar hills'."

## Taxation

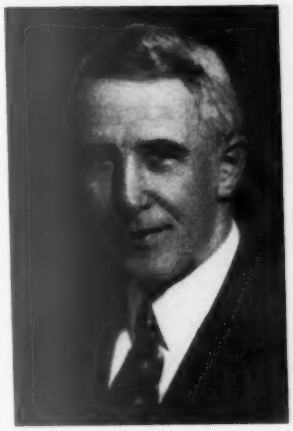
*The 1939 Revenue Act and Western Mining*, By Norman McLaren; McLaren, Goode and Company.

The militant attitude of the Administration toward the Revenue Act of 1938 presaged a pitched battle between American business and the New Deal in 1939, but when Congress adjourned and the boys went home, many of them were surprised to find that their constituents objected to the relief provisions of the 1938 Act only because they did not go far enough.

Regrettably, the frequent changes in tax rates and the endless amendment of important substantive provisions of the law place a premium upon inconsistency, both on the part of the taxpayer and the Government. The taxpayer on the one hand aims to maintain his accounting records in such a manner that he can secure maximum allowances at a time when they will benefit him the most, and the Government is naturally inclined to shift income to years in which it will collect the greatest amount of tax. If, however, a new law is drawn according to accepted accounting principles which will bind the taxpayer and particularly the Government to consistent treatment over the years, and which will prevent changes in the accounting from year to year of items entering into the determination of net income, the major portion of the tax disputes arising from normal business transactions will be eliminated.

Another forward step which would benefit taxpayers and the Government alike would be the adoption of the practice of declaratory rulings by the Treasury Department.

For many years, under Republican as well as Democratic administrations, too great emphasis has been laid by those responsible for the drafting of the Revenue Acts upon loophole closing in order to prevent tax avoidance. For years the chief draftsman and his assistants have completely overlooked Adam Smith's maxim of certainty. Is it not time for a fresh start? The American Institute of Accountants and other public-spirited organizations have earnestly advocated the creation of a qualified nonpartisan commission to conduct the research required for unbiased determination of fixed principles of Federal income taxation. If such a body were to start from scratch and with the cooperation of the Treasury Department, the Securities and Exchange Commission and other interested parties draw a statute which adhered as closely as possible to the modern concept of commercial income, and from which would be eliminated the hypertechnical provisions of the present law, at the same time giving the Commissioner of Internal Revenue broad discretionary powers as well as the right to make declaratory rulings, much of the existing uncertainty could be removed. Under any system of taxation a handful of taxpayers will find means of circumventing the spirit of the law, thus obtaining an unfair advantage, but wholesale avoidance need not be feared with intelligent and honest administration of an understandable law. Due weight should be given to the greatest good for the greatest number, which is the basis of all sound legislation. Let us remind you in the words of Adam Smith, "a very considerable degree of inequality is not near so great an evil as a very small degree of uncertainty."



H. B. FERNALD

Chairman of the Session on Taxation

### *Discussion*

LEO J. HOBAN, secretary, Hecla Mining Company. The importance cannot be overemphasized of drafting a law which will be in effect for a reasonable length of time, to enable the taxpayer to anticipate his future tax liabilities.

*Trends in Federal Taxation*, By Thomas N. Tarleau, legislative counsel, United States Treasury Department.

The most striking trend in Federal taxation, one indeed perfectly obvious to the naked eye, is increased burden.

In apportioning the tax bill among the various sources of revenue open to the Federal Government, a definite trend from indirect to direct taxes is clearly evident.

Our principal direct tax is the income tax. If additional revenue is sought, it appears likely that the income tax will be looked to for the production of such revenue.

If additional revenue is to be obtained from the income tax, it must be obtained in some manner other than through increasing the highest surtax rates. Senator La Follette has on several occasions presented to the Senate amendments to the individual income tax designed to obtain additional revenue through increases in the middle surtax brackets and reductions in the amount of personal exemptions. It is quite possible that consideration will be given to proposals of the type of Senator La Follette's in any effort which may be made to obtain additional Federal revenues. It is not probable, however, that this tendency toward increased rates will be extended to the tax on corporations. The Revenue Act of 1939 fixed at 18 percent the rate on corporations with incomes in excess of $25,000. This change first applies for the year 1940.

Another tendency, which I believe will be continued, is that toward elimination of exemptions from income tax supposedly based upon the Constitution.

Another trend noticeable in recent revenue acts has been the apparent desire of Congress to grant more favorable corporation income tax treatment to small corporations than to large ones.

It may be observed that the Revenue Act of 1939 imposes the highest flat rate of tax upon corporations that we have ever had as a part of our income tax structure. This fact raises new problems which have been considered by Congress and remedied, in part.

There are certain measures which can be taken to lessen somewhat this undesirable effect of the annual reporting of income. Some of these measures have been recognized in prior income tax laws, even though the problem was then less great, and others have not. Perhaps the most important provision of this type is a net loss carry-over. The general effect of the net operating loss carry-over is to permit taxpayers to spread their income over a three-year period and pay income tax on a figure which more nearly approximates their true income for the three years.

Another provision intended to lessen the imposition of tax upon income distorted by fluctuations is of particular interest to the American Mining Congress. It is the provision for taking inventories by the last-in first-out method. This method was first recognized in the Revenue Act of 1938 in a limited manner applicable only to certain mining and processing industries. As a result of a further study of the problem, its scope was extended in the Revenue Act of 1939, effective for the year 1939 and hereafter, so that it is available to any taxpayer.

Another provision of the 1939 Revenue Act which illustrates the trend toward relieving hardships resulting from fluctuations of income relates to the capital stock and excess-profits tax.

Another provision which might lessen hardships resulting from unusual fluctuations in the amount of income is a provision permitting the use of consolidated returns by affiliated corporations.

A minor provision which appears in the Revenue Act of 1939 also relating to fluctuating income is one providing for some reduction of tax liability in cases where compensation is received for services rendered over a period of five years or more.



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***Discussion***

ELLSWORTH C. ALVORD, counsel, American Mining Congress. Changes incorporated in the 1939 Revenue Act may be held as distinct encouragement to business and industry. There has been a partial change in the driver's seat in the Treasury Department, which took place about a year ago when Mr. Hanes and Mr. Tarleau took office. My only fear is that both are too good to remain in the department.

*A Bill to Aid Small Mine Financing*, By Congressman John R. Murdock, of Arizona.

This bill, introduced in the last session of Congress, would set up a Federal Mines Finance Commission, with $150,000,000 to lend to primary mining operations as a revolving fund. It was designed to do for the mining industry what the RFC has refused to do. The Mines Finance Commission, if given $150,000,000 as a revolving fund, would only be spending money already contributed by the industry through the silver seigniorage. Special emphasis would be placed on strategic minerals. The RFC in all of its life had only loaned $700,000 to mining enterprises. The mining industry has never had a subsidy. We are entitled to some help.

*Economic Effect of Present Taxes on the Mining Industry*, By W. H. Hoover, chief western counsel, Anaconda Copper Mining Company.

The elimination of the remnant of the undistributed profits tax to a large extent removes one serious handicap to the development of the mining industry. Loans may now be made for prospecting and development work with the expectation of repayment from the earnings of the enterprise. It should now be possible for mining corporations to maintain a suitable reserve to tide over low earning periods and loss periods which so frequently accompany the vicissitudes of the mining business.

It may well be that the net result of the application of the 1939 Revenue Act to the mining industry will be an increase in the amount of taxes paid, an increase in the total amount received by the Treasury of the United States, accompanied with a removal of those objectionable features above pointed out which have made for inequalities and injustice in the application of the revenue - producing measures.

The mining business, more than any other, needs venturesome investors. The hazard of loss in new ventures is so great that only those corporations and individuals who can afford large losses can furnish the necessary capital. Developments require large contributions of capital—far larger than can be supplied in ordinary avenues of investment. If the property and operations cannot eventually pay the investor the return of his capital, and a fair return for the use of that capital while invested, the money will not be available. The credit requirements for borrowed capital are, of course, much more rigid.

If the present burden of taxation is so great as to limit present operations in the business, it is not so healthy and thriving as to attract extensions or new ventures of the same kind.

If five or ten or twelve dollars of every one hundred dollars received from sales and over 60 percent of the total net earnings must go for taxes, the extent to which the earnings may be applied to further development of existing properties and the opening up of new properties is curtailed just that much.

Coupled with the concern of the industry over the burden of present taxes is the even greater anxiety as to future impositions. When the income tax act was passed in 1913 the rate for corporations was 1 percent of all net income. Now in 1939, 20 years after the war, corporations earning in excess of $25,000 must pay 18 percent of the total net income to the Federal Government.

The pyramiding of the tax burden follows the pyramiding of Federal Government expenses. Industries and individuals have had to reduce their expenditures in every line to meet the depressed conditions and to survive, but at the same time ever mounting tax burdens, both state and Federal, have been imposed to meet the staggering expenditures of the Government.

The mining industry generally is not financially strong enough to bear that burden. The limit has been reached and passed. If we are to maintain, if we are to advance, we must have a settled, assured policy of Federal taxation based on fairness, nondiscrimination, and for revenue only, and coupled with that a rational program of Federal expenditures within the limits of the corners of the country to pay.

Colorful and educational exhibits by mine machinery and equipment manufacturers completely covered the arena of the Minerals Building, and were an important factor in the meeting's success

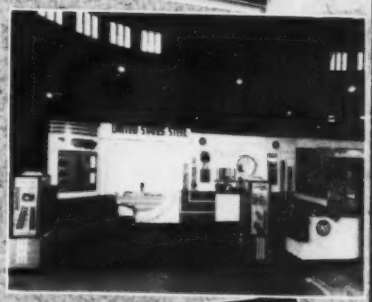
***Discussion***

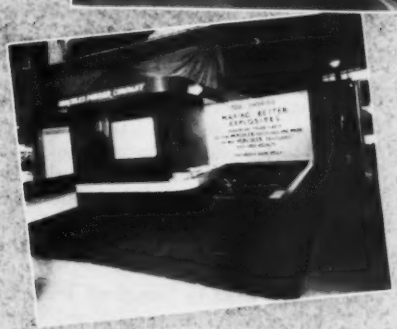
LINCOLN G. KELLY, certified public accountant, Salt Lake City, Utah. The venturesome nature of mine development work cannot be overemphasized. This aspect of the industry should be better understood by those who draft the tax laws. Because of the hazards in mine investment, special consideration should be given to the mining industry.

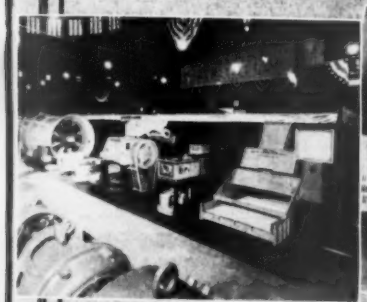
## Declaration of Policy

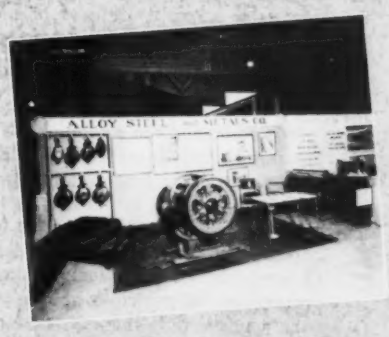
A declaration of policy, comprising a concise statement of the views of the Western Division of the American Mining Congress on vitally important topics of public policy, was presented at the closing session on Thursday afternoon by Donald A. Callahan, chairman of the Resolutions Committee. The resolutions were adopted unanimously, and may be found in full on pages 42 and 43.

General view of exhibits along the aisle next to entrance









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# A DECLARATION OF POLICY--

THE WESTERN DIVISION OF THE AMERICAN MINING CONGRESS assembled in annual convention at Salt Lake City, Utah, August 31, 1939, herewith declares its views upon the following subjects of public policy:

## RELATION OF GOVERNMENT AND BUSINESS

Confidence is the foundation of economic recovery and stability. Essential to confidence are balanced budgets; stable money; thoughtful, well-considered legislation confined to sound, general principles; impartial administration of the law; and encouragement of private enterprise and initiative.

Government should not engage in competition with private industry.

## LABOR RELATIONS

We believe in collective bargaining between employers and employes, but we do not believe in the promotion of national and international labor unionism by law. The National Labor Relations Act is mainly responsible for war in the ranks of labor itself. It has multiplied strikes, curtailed production, increased the cost of goods to the public, brought wage losses to employes, and has contributed to a break-down of law and order and of the general morale of the people in many sections of the country.

We endorse proposed amendments to the law which will prevent coercion in any form and from any source and protect the rights of the majority of employes in each legitimate bargaining unit and the rights of the public to the end that strikes and other interruptions of employment may be eliminated in so far as is possible.

The Fair Labor Standards Act, in its application to mining, is impractical and is destructive to the mining industry of many districts. We urge the repeal of this law.

We believe that better employer-employe relations would result from a change in national policy based upon recognition of the fact that our country is too large, its industries too varied, conditions in the different states, sections and localities too diverse, to permit of successful administration of any law placing control of such relations in Federal agencies.

## TAXATION

We commend the action of the Congress in repealing the undistributed profits tax and imposing a flat-rate tax on corporate incomes; recognizing the necessity of carrying forward business losses as deductions from income of future years; imposing lower rates of tax upon capital gains; allowing without limitation the deduction of long-term capital losses from corporate incomes; preserving the principle of reasonable depletion allowances; permitting the use, under specified conditions, of the so-called "last-in first-out" method for determining the cost of goods sold; and authorizing the revision upward of the declaration of value for capital stock purposes. The Congress and the Treasury have recognized the dangers of an excessive and ever-increasing tax burden for the future and have afforded a basis for hope that the Federal revenue system will be restored to a sound basis.

We advocate the enactment of a reasonably permanent revenue system based upon the policy that private employment provides the only permanent solution of unemployment; that private enterprise and initiative must be protected and encouraged; that increased industrial activity requires expansion and new enterprise; that the net return from new and venturesome enterprises must be adequate to attract private capital; that private investment must replace Government spending. Only under such policies can our revenue system produce maximum yields over a period of years; can the national income be sufficiently increased to provide adequate Government revenues; can the Federal Budget be relieved of heavy demands for unemployment relief and for extraordinary Government spending.

Consistent with the above policies, we urge that the existing high rates of tax imposed upon corporate and individual incomes, upon capital gains, and upon estates be reduced substantially; the earned income of individuals be taxed at substantially lower rates than other forms of income; taxable income be computed on the basis of consolidated returns compulsory for affiliated corporations; the multiple taxation of business income from corporate enterprise be eliminated and the tax on dividends received by corporations and the normal tax on dividends received by individuals be removed; business losses be carried forward as allowable deductions for at least five years; the prior law with respect to employe pension trusts be restored; reasonable provision for the liquidation of personal holding companies be enacted and more reasonable methods for the taxation of these companies which cannot be liquidated be prescribed; the capital stock tax be repealed at the earliest possible date, and until repealed an annual declaration of value granted; and numerous complications of the existing law be eliminated and every effort be made for substantial simplification of the law and its administration.

We believe that income from future issues of Federal, state, and municipal securities should not be exempt from taxation, but we do not believe that the reduction of individual surtax rates should be dependent upon the adoption of this principle. We endorse the recommendation of the Secretary of the Treasury with respect to coordination of Federal, state, and local tax systems and the removal of existing duplications. We note a trend toward better administration of our tax laws by the Treasury.

## CONGRESSIONAL CONTROL OF EXPENDITURES

A sound fiscal system requires adequate control over expenditures, which must be kept within the revenue yields of a sound and reasonably permanent system of taxation. Congressional responsibility for expenditures should be united with congressional responsibility for revenues. We urge that each House of Congress create a Committee on the Budget, the membership of which will include members responsible for appropriations and members responsible for taxation. The annual executive

budget, containing estimated revenue yields and the proposed expenditures for the year, should be referred to this committee. After appropriate committee consideration and full debate, each House of Congress should then determine and fix the maximum amount of expenditures for the year, and require that the separate appropriation bills, as well as legislation authorizing appropriations, conform to this determination, and the aggregate be kept within this maximum amount. With a ceiling thus placed upon expenditures, an effective control by Congress over both taxation and appropriations can be restored and maintained.

We urge that the members of the mining industry, individually and by groups, give their full cooperation to Congress and the administration to eliminate all unnecessary and avoidable appropriations; and so bring about needed reduction in Government expenditures.

## TARIFF

The American metal mining industry cannot hope to meet normal domestic needs, much less increased demands for its products essential to national defense, without substantially all the tariff protection it now enjoys, and in some cases additional protection.

We urge that tariff reductions be made only when exhaustive investigation insures that no damage will be done to the public interest by crippling or destroying established domestic industries and employment.

We believe that the United States Senate should resume its constitutional function of ratifying treaties.

## MONETARY POLICY

We favor control of our monetary system by the Congress. We favor a currency with a metallic base as opposed to a so-called managed currency. We favor the use of both metals—gold and silver—in such monetary system, and we favor the purchase of newly mined domestic gold and the coinage of newly mined domestic silver as a means of maintaining a metallic base for our currency.

We commend the action of Congress in providing by statute for the coinage of domestic silver and its recognition as a part of the monetary base. However, it appears to us neither logical nor just that the producer of domestic silver should receive only 55 percent of the monetary value of his silver so long as the Government compels the creditors of individuals as well as of the Government to accept such silver at the full monetary value as fixed by statute.

## SECURITIES AND EXCHANGE COMMISSION

We commend the Securities and Exchange Commission for the steps it has taken looking toward a more rational and understanding treatment of the problems involved in the issuance of mining securities and urge that the recommendations made by our Committee on Cooperation with the Securities and Exchange Commission be put in full effect.

## GREAT LAKES-ST. LAWRENCE WATERWAY AND POWER PROJECT

We oppose any treaty with Canada providing for a Great Lakes-St. Lawrence deep waterway and power development. This enterprise would require enormous expenditures of public funds, needlessly increasing tax burdens, for a project which reveals no present economic justification.

## WATER POLLUTION

We oppose any law or any action placing control of water pollution under any Federal bureau or Federal official. Water pollution is essentially a local problem and can be dealt with effectively and fairly only by the government of each individual State, supplemented if necessary by interstate agreements.

## STRATEGIC MINERALS

In view of conditions abroad, we consider it more vital than ever that our Government be fully prepared for any national emergency. Therefore, we commend the passage by Congress of the Strategic Materials Act, authorizing appropriations for the accumulation of stockpiles upon recommendation of the Army and Navy Munitions Board, and for the investigation of ore deposits by the Bureau of Mines and the Geological Survey. We pledge our cooperation in the administration of this Act.

We urge a policy of permanent stockpiles, the materials to be used solely in the event of national emergency. We recommend the purchase of domestic materials whenever possible.

## U. S. BUREAU OF MINES AND U. S. GEOLOGICAL SURVEY

We endorse the work of the U. S. Bureau of Mines and U. S. Geological Survey. Their services have been invaluable to the mining industry.

We disapprove any impairment of their functions. We further disapprove any alteration of the duties of the Bureau of Mines and especially its diversion from a broad program of research in safety and health problems to work of inspection and control, which should properly be handled by the state governments.

## GOLD RESERVE ACT

We commend such activity as has been exercised by the Treasury Department in apprehending and convicting high-graders.

We favor strengthening the terms of the Gold Reserve Act so as to further facilitate such action, and urge the Treasury Department to take vigorous steps to stamp out this nefarious practice.

## PUBLIC LAND POLICY

We insist on adherence to the present law governing the acquisition of mineral lands on the public domain, which has operated successfully for many generations, namely, by discovery, location, and patent. We are opposed to any proposal to invalidate the established laws relating to mineral locations and to all proposals for the leasing of mineral ground by the Government either in continental United States or in Alaska.

We are in favor of the development of mineral lands within national parks and reservations on the same terms and under the same requirements as prescribed by law for appropriation and use of similar lands on the public domain. We are opposed to the creation of any further public reservations or parks in the United States or Alaska unless the prospecting and mining rights of citizens are preserved and protected.



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## THE EXPOSITION

The exposition of mining and milling equipment and supplies was again an outstanding drawing card and feature attraction of this annual meeting. Sixty-one leading manufacturers were represented with educational displays which drew widespread interest from all mining men present. The delegates took full advantage of this opportunity to study and inspect, at a central point, the great variety of machinery and equipment available as an aid in conducting all phases of their operations.

Enthusiastic comments of exhibitors regarding the contacts made during the week attested to the value of the exposition, and manufacturers and operators were in thorough accord that this occasion for informal discussion of the industry's operating problems is mutually advantageous.

Large units in operation, equipment and plant models, motion pictures, moving displays, and photographic presentations were all used to show vividly the services which the manufacturers offer the industry.

All those who cooperated in staging the exposition are to be warmly commended for their part in its outstanding success.

## ENTERTAINMENT

Popularity of the entertainment functions planned by the local committees was plainly evidenced by the record attendance of delegates and their wives at all four principal events.

*Welcoming Luncheon.* — A royal welcome to delegates was tendered Monday noon at a gathering of some four hundred strong in the newly redecorated banquet room of the Newhouse Hotel.

With James W. Wade, general chairman of the Arrangements Committee, as toastmaster, delegates received warm greetings from Governor Henry H. Blood, of Utah, and Mayor John W. Wallace, of Salt Lake City.

Governor Blood stressed the importance of the mining industry to Utah and the West, and emphasized how the condition of the mining industry is reflected in every other commercial activity in the state. He invited the delegates to make themselves thoroughly at home in Utah, and expressed the hope that their stay would be a most pleasant one.

Mayor Wallace, after extending the city's greetings, said: "We in Utah have a particular interest in the costs incident to mining operations and the research necessary for processing low-grade ores in order to continue mining and processing at our present level, and to further expand this important industry. Mining is a matter not to be left entirely to mining men and companies. It is a matter of importance to be considered by state and local planners in order to further develop it."

Appropriate responses on behalf of all those present were made by Howard I. Young, president of the American Mining Congress; D. D. Moffat, chairman of the Western Division; George H. Rupp, chairman of the Program Committee; and Roy L. Cox, vice president of the Jeffrey Manufacturing Company, representing the Manufacturer's Division of the American Mining Congress.

Delegates then heard a stirring address by Hon. William H. King, United States Senator from Utah, who reviewed European developments leading up to the present crucial situation, in which he flayed Russia's signing of the recent German pact, and pointed out that he had predicted this some time ago. As reason for this, he emphasized that Hitler and the Soviet Government have the same idealogy—despotism, disruption of religion, ungodliness and barbarism.

Advocating that when Congress meets again it enact such legislation "as would enable us to make right any affront against us," the Senator declared, "we must maintain our present democratic government and build it up as an example to the world."

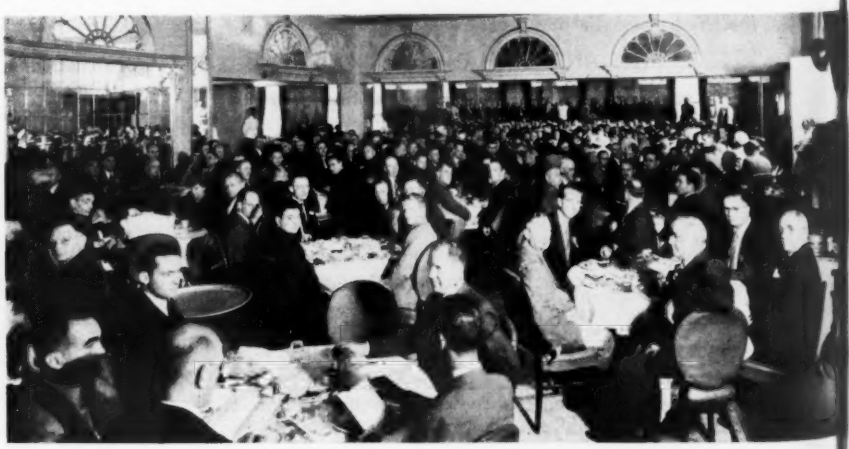
*Informal Dinner Dance.*—Nearly seven hundred delegates and ladies gathered Monday evening on the terrace of Salt Lake Country Club for a delicious buffet dinner, followed by dancing and a splendid floor show presented on an open-air stage with a beautiful background of foliage and mountains. A heavy thunderstorm—the second in the past three months, according to Salt Lake records—threatened to disrupt the outside activities, but obligingly passed by and over the mountains with only a brief sprinkle.

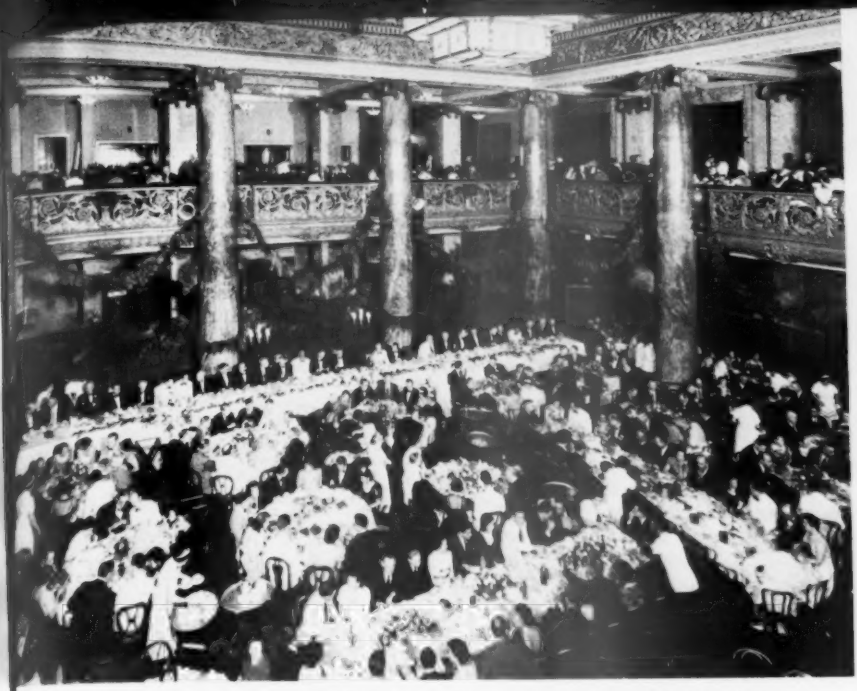
*Saltair Jamboree.*—On Wednesday some eight hundred delegates and ladies traveled to the huge pavilion on Saltair, on the shore of Great Salt Lake, to enjoy an evening of varied fun. Hundreds donned bathing suits and enjoyed the novelty of a "swim" in the salt-saturated water, which was followed by a session of conviviality in a cleverly decorated enclosure in the pavilion and a fine picnic dinner. Following this, a special floor show, imported from Hollywood, was presented on the ballroom floor above, with dancing closing the evening's festivities.

*Annual Banquet.* — Appropriately climaxing the week's activities was the annual banquet, held in the lobby and mezzanine of the Utah Hotel, beautifully decorated and arranged to handle the record crowd. Over eight hundred delegates and ladies heard Toastmaster James Ivers introduce distinguished guests at the speakers table, during which appropriate informal remarks were made by Howard I. Young; Louis S. Cates, president of Phelps Dodge Corporation; and D. D. Moffat. In the unavoidable absence of D. C. Jackling, president of Utah Copper Company and Nevada Consolidated Copper Corporation, Mr. Moffat read a letter of warm greeting from him, which appears in full on pages 10 and 11.

Included among the honored guests at the speakers table were Governors

Large crowd of delegates and ladies at the Welcoming Luncheon at Hotel Newhouse





The lobby and mezzanine of Hotel Utah were tranformed into a beautiful setting for the Annual Banquet

KEY PITTMAN
U. S. Senator from Nevada, principal speaker at the banquet

JAMES IVERS
Toastmaster

Blood of Utah, Carville of Nevada, and Jones of Arizona, and President Heber Grant, of the Church of Latter Day Saints.

Toastmaster Ivers, in introducing the Hon. Key Pittman, United States Senator from Nevada and chairman of the Foreign Relations Committee of the Senate, the principal speaker, paid glowing tribute to the Senator as an outstanding statesman of our time and a friend of western mining who has been invaluable to the industry in his Washington activities. Senator Pittman, in what will certainly go down as an historic statement, gave a stirring address on the foreign situation, even as Germany's troops were already starting their invasion of Poland, but before news of this had reached Salt Lake City.

Senator Pittman stated that it would be easier for the United States to stay neutral during a next war than it was during the last one. The reason, he said, is that Congress in passing the recent neutrality legislation abandoned the right to free shipping which this country entered the World War to defend.

"The Congress decided definitely it would be better for our people to suspend these legal rights until after the World War was over and then seek damages," he explained. Although the United States will not go to war again to defend its commercial rights, it should still exert all the moral support it can for peace, the Senator said. "I don't think it is incumbent on any of our citizens, even our President, to refrain from condemning wrong, to refrain from condemning the violation of peace treaties and the destruction of innocent life from the air by bombs and gases. We cannot be that cowardly. If those who object to our telling the truth want to, let them declare war," he challenged, adding that this country is impregnable to attack.

After Senator Pittman's address, the banquet was turned over to Alex Templeton, world famous blind composer and pianist, who delighted the assembly with several classical selections and a generous number of his own compositions in which his genius at improvisation, coupled with delightful humor, were sparklingly displayed.

Dancing in the Lafayette Ballroom concluded the evening's entertainment.

## LUNCHEON MEETINGS

A luncheon meeting of the Executive Tax Committee of the American Mining Congress was held Wednesday noon in the President's Room of Hotel Utah, at which important policies with regard to tax matters were thoroughly discussed.

On Thursday noon a joint luncheon meeting of the Board of Governors of the Western Division and the Board of Directors of the American Mining Congress was held, at which the following members of the Western Board of Governors were elected for the coming year:

*Alaska.*—Roy Earling, Fairbanks Exploration Dept., U. S. Smelting, Refining & Mining Co., Fairbanks; P. R. Bradley, Alaska Juneau Mining Co., San Francisco, Calif.; Luther C. Hess, president, Alaska Miners Association, Fairbanks.

*Arizona.*—P. G. Beckett, Phelps Dodge Corporation, Douglas; T. H. O'Brien, Inspiration Consolidated Copper Co., Inspiration; Charles F. Willis, secretary, Arizona Small Mine Operators Association, Phoenix.

*California.* — Worthen Bradley, Bradley Mining Co., San Francisco; Thomas McCormack, Natomas Co., Sacramento; Robert Linton, mining engineer, Los Angeles.

*Colorado.*—George H. Rupp, Colorado Fuel & Iron Co., Pueblo; William J. Coulter, Climax Molybdenum Co., Denver; Robert S. Palmer, secretary, Colorado Chapter, American Mining Congress, Denver.



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Joint luncheon of Board of Governors, Western Division and Board of Directors

*Idaho.* — Howard G. Washburn, Federal Mining & Smelting Co., Wallace; C. A. Dye, Tendoy Copper Queen Syndicate, Tendoy; J. W. Gwinn, secretary, Idaho Mining Association, Boise.

*Montana.*—W. B. Daly, Anaconda Copper Mining Co., Butte; Dr. F. A. Thomson, Montana School of Mines, Butte; Carl J. Trauerman, president, Mining Association of Montana, Butte.

*Nevada.*—J. C. Kinnear, Nevada Consolidated Copper Corp., McGill; H. A. Johnson, Tonopah Mining Co., Tonopah; Henry M. Rives, secretary, Nevada Mine Operators Association, Reno.

*New Mexico.*—Horace Moses, Chino Division, Nevada Cons. Copper Corp., Hurley; Ira L. Wright, Black Hawk Cons. Mines Co., Silver City; T. D. Benjovsky, president, New Mexico Miners and Prospectors Association, Silver City.

*Oklahoma.* — George W. Potter, Eagle Picher Mng. & Sm. Co., Joplin, Mo.; L. G. Johnson, Federal Mng. & Sm. Co., Baxter Springs, Kans.; Evan Just, secretary, Tri-State Zinc and Lead Ore Producers Association, Miami.

*Oregon.*—Leverett Davis, Cornucopia Gold Mines, Cornucopia; F. Whalley Watson, secretary, Oregon Mining Association, Portland.

*South Dakota.*—Guy N. Bjorge, Homestake Mining Co., Lead; C. E. Dawson, Bald Mountain Mining Co., Trojan.

*Texas.*—J. D. Mackenzie, manager, Southwestern Dept., American Sm. & Ref. Co., El Paso; H. E. Treichler, Texas Gulf Sulphur Co., Newgulf.

*Utah.*—J. O. Elton, International Sm. & Ref. Co., Salt Lake City; W. J. O'Connor, American Sm. & Ref. Co., Salt Lake City; A. G. Mackenzie, secretary, Utah Chapter, American Mining Congress, Salt Lake City.

*Washington.*—L. P. Larsen, Pend Oreille Mines & Metals Co., Spokane; C. P. Browning, Chelan Division, Howe Sound Co., Holden; Roger Oscarson, president, Northwest Mining Association, Spokane.

Invitations to hold the 1940 convention and exposition were extended by delegates from San Francisco, Colorado Springs, Denver, San Antonio and St. Louis. In accordance with established practice, decision as to the place and date of this meeting will be made in the near future.

## SPECIAL LADIES' ENTERTAINMENT

A fine program of entertainment for the large number of ladies attending the convention with their husbands included: Sightseeing around Salt Lake City, followed by tea at the country home of Mrs. Oscar N. Friendly on Tuesday, as guests of the Salt Lake section of the Women's Auxiliary of the American Institute of Mining and Metallurgical Engineers; a breakfast-bridge on Wednesday at the Salt Lake Country Club, with Mrs. A. G. Mackenzie as hostess; and a special organ recital at the Latter Day Saints' Tabernacle on Thursday, followed by a beautiful buffet luncheon on the roof of the Hotel Utah.

The local Salt Lake Ladies' Committee consisted of: Mrs. Burt B. Brewster, Mrs. O. J. Egleston, Mrs. J. O. Elton, Mrs. W. Mont Ferry, Mrs. Cecil Fitch, Mrs. Lawrence Fox, Mrs. O. N. Friendly, Mrs. E. A. Hamilton, Mrs. H. H. Hartman, Mrs. Paul H. Hunt, Mrs. James Ivers, Mrs. J. Fred Johnson, Mrs. C. T. Keigley, Mrs. William F. Koch, Mrs. W. R. Landwehr, Mrs. A. G. Mackenzie, Mrs. Duncan MacVichie, Mrs. D. D. Moffat, Mrs. F. S. Mulock, Mrs. J. A. Norden, Mrs. W. J. O'Connor, Mrs. M. D. Paine, Mrs. R. A. Pallanch, Mrs. H. E. Raddatz, Mrs. J. D. Shilling, Mrs. George W. Snyder, Mrs. J. W. Wade, Mrs. L. A. Walker, Mrs. Gloyd M. Wiles and Mrs. A. B. Young.

## SILVER CONFERENCE AND TRIPS

Following the convention's official close on Thursday, a goodly representation of delegates remained to attend the second Governors' Silver Conference, which was held in the Hotel Utah on Friday. A full account of this conference, including resolutions adopted, may be found on page 51. The Hon. Pat McCarran, United States Senator from Nevada, was among the principal speakers. In order to afford everyone the opportunity to attend this conference, no trips were scheduled for the day.

On Saturday a sizable group of delegates boarded a special bus to view the world-famed operations of the Utah Copper Company and American Smelting and Refining Company, including visits at the Garfield Smelter, the Magna mill, and the huge open pit at Bingham, arrival at which was timed to allow the guests to witness the afternoon blasting. The trip to and from Bingham was made via the new vehicular tunnel, a bore of 7,000 feet recently completed to give access to the town when it became necessary to block the former road by the enlarged operations of the Bingham pit.

Ladies' luncheon on the roof of the Hotel Utah, following organ recital in the tabernacle of of the Latter Day Saints

## The 76th Congress and the Mining Industry

(*Continued from page* 17)

month to urge the restoration of the tariff to the former level. The whole situation is of extreme importance not only to zinc but to other metals, for there are definite suggestions that the cut in the zinc duty may be only the entering wedge in an endeavor to reduce other mineral tariffs. Revisions of existing trade agreements or new agreements are contemplated with countries which are substantial producers of lead, copper, tungsten and other minerals, and these will require the utmost vigilance on the part of those who may be affected.

### Progress Towards Simplified S.E.C. Regulations

At some of your previous meetings you have heard from officials of the Securities and Exchange Commission. As you may know, we have been working closely with that organization, in the endeavor to eliminate the difficulties in the issuance of mining securities under the Securities and Exchange Act.

At the convention in Los Angeles last year our Committee for Cooperation with the SEC, headed by Mr. Samuel H. Dolbear, submitted a report which was one of the outstanding features of that meeting. Among other things the committee recommended creation of a separate mining unit within the SEC, to secure an improved understanding of the special problems involved in mining ventures. Early this year several of our congressmen and senators joined in urging the Commission to create such a unit, and favorable action was taken in May of this year. We are also advised that a simplified version of Form A-O-1, for registering securities of primary mining ventures, will be issued shortly, as well as simplified regulations under rules 202 and 210 which cover security issues of $100,000 or less. We are sure you will be glad to know of this progress, though we realize full well the many problems which still exist in the financing of worth-while mining properties.

Ed. Note: Mr. Conover then extended a cordial invitation to all mining men from Montana and neighboring states to attend the 6th Annual Metal Mining Convention and Exposition of the American Mining Congress, Western Division, in Salt Lake City, Utah, August 28-31. A full account of this meeting may be found elsewhere in this issue.

## Mercury Arc Rectifiers

(*Continued from page* 27)

are particularly well suited for those operations having long light load periods where the light load losses of the rectifier show up to the best advantage. Their maintenance costs should be lower than for rotating machines, since there are no large bearings, commutators, brushes, or winding insulation to take care of and replace on occasion, and there are no problems of misalignment and vibration to worry about. Rectifier substations are particularly resistant to lightning damage; and they do not impose the high starting loads on the A.C. system which M.G. sets do. They are particularly well suited to mining loads because of their high overload capacity.

They are somewhat at a disadvantage if power factor correction is required, but even then a study of the expected operating conditions may indicate that their higher efficiency, lower light load losses, and greater short time overload capacity would justify the additional cost for the necessary capacitors to provide the equivalent leading reactive Kva. obtainable from an M.G. set.

The rectifier of today is obviously not the last word, because the research engineers of the various manufacturers are constantly striving to improve their life, efficiency and operating characteristics; and, furthermore, the manufacturing organizations are endeavoring to find ways and means of reducing the cost of construction, so that this effective conversion tool can be made available to a constantly enlarging field.

*Submitted July, 1939, by F. P. Brightman.*

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## Mining Section Program of National Safety Congress

Preliminary listing of the subjects and authors of papers to be presented before the Mining Section at the 28th National Safety Congress, to be held in Atlantic City, N. J., October 16-20, 1939, include the following:

MONDAY AFTERNOON, OCTOBER 16

*The Executive's Viewpoint*

Opening remarks by General Chairman L. C. Campbell, assistant to the vice president, The Koppers Coal Company.

Safety Problems Faced in Bituminous Coal Mining, by Heath Clark, president, Rochester and Pittsburgh Coal Company, and president, National Coal Association.

Safety Problems Faced in Metal Mining (speaker to be announced).

Safety Problems Faced in Anthracite Coal Mining, by Cadwallader Evans, Jr., vice president and general manager, the Hudson Coal Company.

TUESDAY AFTERNOON, OCTOBER 17

*The Federal and State Viewpoint*

Federal Aim in Mine Safety, by Dr. John W. Finch, director of the U. S. Bureau of Mines.

State of Pennsylvania Aim in Coal Mining Safety, by John Ira Thomas, Secretary of Mines.

Aim in Metal Mining Safety (speaker to be announced).

WEDNESDAY AFTERNOON, OCTOBER 18

*The International Viewpoint*

The Relations of Accidents and Rehabilitation (speaker to be announced).

Some Aspects of Safety in Manitoba (speaker to be announced).

Question Box—suggestions for review of 1939 program and expansion of mining section safety activities for 1940.

A luncheon will be held Tuesday noon, at which J. T. Ryan, president of the Mine Safety Appliances Company and chairman of the entertainment committee will preside. Guests at the luncheon will hear an address by Donald B. Gillies, vice president of the Republic Steel Corporation, and president of the American Institute of Mining and Metallurgical Engineers.

Election of the 1939-40 officers will be held at the afternoon session on October 17, and the new officers will be installed the following afternoon. Ample time for full discussion of each of the papers has been provided for.

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## Joint Coal Conference in Columbus

A joint meeting of the Coal Division of the American Institute of Mining and Metallurgical Engineers and the Fuels Division of the American Society of Mechanical Engineers will be held in Columbus, Ohio, October 5, 6 and 7.

R. A. Sherman, supervising fuel engineer at Battelle Memorial Institute, has been named chairman of the general committee for the meeting.

**PETER F. LOFTUS**

***Consulting Engineers***

ENGINEERING AND ECONOMIC SURVEYS, ANALYSES AND REPORTS ON POWER APPLICATIONS AND POWER COST PROBLEMS OF THE COAL MINING INDUSTRY

**Oliver Building Pittsburgh, Pa.**



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# WHEELS of Government

● *As Viewed by A. W. Dickinson of the American Mining Congress*

ADJOURNMENT of a strife-torn Congress came at 6.30 p. m., August 5, with many of the Senators and Congressmen already en route to their homes from Washington. Senate Majority Leader Barkley of Kentucky and House Leaders Bankhead of Alabama and Rayburn of Texas found it necessary during the last week of the Congress to plead with their Democratic members to remain in town and to stay on the floors of the two houses to protect administration measures against the attacks of Republicans and anti-New Deal Democrats.

All through the first session of the 76th Congress, the time of the administration leaders was chiefly occupied in fighting a rear guard action against determined attempts to amend hastily enacted and immature legislation, such as the National Labor Relations Act, the Wage Hour Act and the National Bituminous Coal Act. Action on these and other controversial measures has gone over until the next session which is expected to convene January 3, 1940. In the meantime, the country will continue with its experience under the National Labor Relations Act, and the Wage Hour Act which on October 24 automatically reduces the work week to 42 hours. The bituminous coal industry will continue to struggle with its losses while the administrative officers of the Guffey Coal Act muddle along with attempts at price fixing. Under these circumstances it will be surprising if the Congress which meets in January, 1940, is not even more anti-New Deal than that which has just adjourned, and it is well to remember further that the returning Senators and Congressmen will come back to Washington from direct and fresh contacts with their constituents and hence with the mandates of the people ringing in their ears.

### Taxation

After reviewing and arranging for the tax studies to be pursued by the Treasury Department and by the Joint Committee on Internal Revenue Taxation in the intervening months, the Ways and Means Subcommittee under the chairmanship of Representative Jere Cooper of Tennessee agreed to meet in Washington on November 1, to pursue their work in preparation for the Revenue Bill of 1940. The helpful features embodied in the Revenue Act of 1939 were largely the result of the far-seeing policy of Undersecretary of the Treasury John Hanes, who fought a real battle to accomplish in part his objectives of bringing about a restoration of investors' confidence and starting the flow of idle money into industrial enterprise. Undersecretary Hanes has now issued an invitation to business men to make suggestions for amendment of the revenue law. He has entered upon a program of private hearings before members of the staff of the Treasury Department, whereby suggestions will be received not only for tax revision, but also for a better development of the regulations under which the revenue laws are administered and for a much needed improvement in the administrative procedure under which the Federal tax gatherers carry on their dealings with the taxpayers.

### Social Security

In the last hours of the session, the amendments to the Social Security Act were reported from a long deadlock between the Senate and House conferees and received the approval of both houses. The amendment "freezes" the old-age benefit tax at 1 percent until 1943 and authorizes benefit payments to begin on January 1, 1940 instead of 1942. Aid is granted to the wives of pensioners; and students, together with employes of religious, charitable, scientific, literary or educational groups are exempt. A limitation of $3,000 is placed on the assessment of unemployment taxes on an individual's salary. The amendment further permits an employer to take the full Federal deduction of 90 percent of the 3 percent tax, even though the state tax may be at a lower rate; and requires the Federal Government to contribute up to $20 a month, on a matching basis, for old age pensions.

### Foreign Trade Agreements

For some time before the adjournment of Congress, there had been rumors of coming negotiations on foreign trade agreements with Latin American countries as well as with Belgium, Sweden, Switzerland, France and Finland. Just as soon as Congress was safely out of town came the announcement on August 16 of the intention to negotiate a trade treaty with Belgium. This will be the second treaty with this country, and in the list of commodities to be considered for reduction in duty are many products of interest to mining. September 16 is the closing date for the submission of briefs by interested persons, and applications to be heard before the Committee for Reciprocity Information beginning October 2 must be filed with the committee by September 16. The commodities of interest to mining are: aluminum sulphates; ammonium nitrates; antimony oxides; chalk; cobalt oxide; lead pigments (white lead); zinc oxide and leaded zinc oxide; sodium phosphate; sodium sulphide; zinc chloride; Roman, Portland and other hydraulic cement or cement clinkers; white non-staining Portland cement; sand containing 95 percent or more of silica; marble, commercially known as black marble, in block, rough or squared only; muck bars, pieces thereof except crop ends, bar iron, and round iron in coils or rods, iron in slabs, blooms, loops, or other forms less finished than iron in bars and more advanced than pig iron, except castings; steel ingots, cogged ingots, blooms and slabs, die blocks or blanks, billets and bars, whether solid or hollow; shafting; pressed, sheared, or stamped shapes,

not advanced in value or condition by any process or operation subsequent to the process of stamping; hammer molds or swaged steel; gun-barrel molds not in bars; concrete reinforcement bars; all descriptions and shapes of dry sand, loam, or iron molded steel castings; sheets and plates and steel not specially provided for; boiler and crucible steel plate and saw steel plate; sheets of iron or steel; beams, girders, joists, angles, channels, car-truck channels, tees, columns and posts, etc.; hoop or band iron; wire rods; wire strand; galvanized wire; railway fishplates; rail braces and all other railway bars; wheels for railway purposes; iron and steel tubes; bolts, nails, spikes, tacks, etc.; rivets of iron or steel; alloys or combinations of lead not specifically provided for; zinc in sheets; woven wire fencing coated with zinc; asbestos shingles and articles in part of asbestos, if containing hydraulic cement or hydraulic cement and other materials; unexposed photographic plates and films; diamonds, cut but not set; sulphide of arsenic; dead or creosote oil; cobalt and cobalt ore; miner's diamonds; ferrous sulphate or copperas; basic slag; precipitated bone of a grade used chiefly for fertilizers; ammonium phosphates; ammoniated super-phosphates; radium and salts; uranium, oxide and salts; all barbed wire.

It will be remembered that in the negotiations for the Canadian Trade Treaty (in which zinc lost 20 percent of its duty) a supplemental list of commodities subject to negotiations for reduction in duty was filed about ten days subsequent to the first announcement.

### National Labor Relations Act

The Senate and House Labor Committees were able to meet the wishes of the CIO by stalling the hearings on amendments to the Wagner National Labor Relations Act and thereby carrying any further consideration over to next winter. However, the National Labor Relations Board will have a busy time this fall before the Investigating Committee under the chairmanship of Representative Howard W. Smith of Virginia. Chairman Smith will have with him two Republicans, Charles A. Halleck of Indiana and Harry Routzohn of Ohio, both of whom are outspoken critics of the actions of the Board. The other two Democrats appointed by Speaker Bankhead are Abe Murdock of Utah and Arthur D. Healey of Massachusetts, both of whom are known as strong administration supporters. The Investigating Committee has a voluminous record from which they may draw in the prints of the hearings before the Senate and House Labor Committees.

### Wage-Hour

While the Norton, Barden and Ramspeck bills were sent to the floor of the House in the last days of the session under a joint rule, the situation was so controversial on the amendments which they contained to the Fair Labor Standards Act of 1938, that House Majority Leader Sam Rayburn of Texas made the definite announcement on August 3 that Wage-Hour amendments would go over until next winter. It will be remembered that the Ramspeck bill provides a maximum hours exemption for the mining and milling of non-ferrous metallic ores or operations incidental thereto. This would permit a 56-hour work week before payment of overtime; the same provision which is contained in the Norton bill carries the further proviso: "if the place of such employment, either by reason of high altitude, remoteness from established settlements, or climatic conditions, is relatively difficult of access." It is believed that these proposed amendments will place the mining industry in a stronger position when amendments are considered next winter, and there is the further fact that the statutory reduction in hours on October 24, 1939, from 44 hours per week to 42 hours per week, will unquestionably bring on an increased desire to change the present language of the Act.

### Strategic Minerals

The Third Deficiency Bill carried $10,000,000 for the purchase of strategic materials. While the authorizing bill sponsored by Senator Elbert Thomas of Utah and Representative James G. Scrugham of Nevada, provided $100,000,000 to be expended over a four year period, it is understood that it was felt to be in the best interests of domestic producers to authorize only $10,000,000 for purchase in the fiscal year 1940. It is felt that by next July the Army and Navy Munitions Board will have gained additional experience and that domestic producers of strategic metals will be in a better position to furnish shipments in volume. By this procedure, foreign purchases can be cut to a minimum and more of the business will go to the American miner. A barter bill was enacted in the last days of the session which permits the Commodity Credit Corporation to exchange surplus agricultural commodities for strategic and critical materials produced in foreign countries. It is understood that this also will help the American miner by keeping more of the $100,000,000 for purchases of strategic minerals at home during the four year period.

### Bituminous Coal Division

In its attempted administration of the Guffey Coal Act, this Division is continuing to hear the various district boards in their testimony on the proposed coal prices. The work is dragging very slowly, and predictions are now that the final proclamation of prices cannot take place until February or March of next year.

The promise that the Tennessee Valley Authority would replace the taxes lost by the states in the Tennessee Valley through the purchase of utilities properties, was given lip-service in the last days of the Congress by the introduction of a bill by Senator Norris of Nebraska. The bill would provide a fund to be created by a levy on gross receipts from power sales in the amount of 10 percent for the fiscal year 1940, graded down to 5 percent by 1948. Representatives of bituminous coal producers have consistently opposed the purchase of private utility property by the TVA and similar Federal agencies, as encroachments upon the natural market for coal.

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Washington Monument at night behind the calm Potomac

*—Photo by Charles Simpson*

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# NEWS and VIEWS

## Bituminous Price Hearings Continue As Protests Mount

The final hearing on proposed minimum prices for bituminous coal, which started on July 24, is still continuing, with the prospect that it will be several weeks before all testimony and cross-examination can be completed. However, it was announced in mid-August that the Bituminous Coal Division was studying means to expedite the final hearing by consolidating hearings on individual protest to the proposed prices wherever possible, and this may hasten final closing of the hearing.

The Division has received some 300 petitions or letters protesting one or more of the proposed price quotations from producers, and the Consumers Counsel Division announces that approximately 150 protests against proposed coordinated minimum mine prices have been filed by consumers and consumer representatives. The period for filing protests closed early in August, but persons who can make a showing of sufficient cause to the examiners conducting the hearing will be allowed to file tardy protests.

The Division has also announced that it will not be necessary for all of the persons who have filed protests to appear in person at the hearing, in order for them to be considered in making a final decision on the prices. Abe Fortas, Division General Counsel, stated that parties who intended to rely upon arguments, rather than to submit facts to support their protests, do not need to physically appear at the hearing, but may file briefs. Their protests and briefs, he explained, would receive the same consideration as if they had appeared and made their arguments in person.

Virtually all of the protests received from operators seek to have f.o.b. mine prices for particular grades, sizes or quantities of coals they produce raised or lower in relation to those of their competitors for certain markets. The Division has announced that few attack the fundamentals of the law or the method of administration. It is expected that many of those who have filed petitions or letters will not appear in person. It is also felt that in a great many cases and where actual appearances are made, the hearing of a large number may be disposed of within a day's session. However, there are some where several witnesses will testify, and which will take more time for hearing. These have been filed by the larger producers and some of the producers' boards.

Where a study of the protests filed, now under way, reveals the issues in individual protests to be identical, and the other conditions will permit, it may be possible to save considerable time by conducting the hearings by groups of protests. This is designed to eliminate much duplication and to avoid expense to protestants.

After close of the final hearing, and consideration of the evidence, the Division will establish minimum prices, and marketing rules and regulations will become effective to aid the industry in eliminating the price wars and other unfair trade practices which the Division estimates results in an annual wastage of from 100 to 150 million tons of coal and the loss of millions of dollars to the industry.

Evidence in support of the proposed coordinated prices for coals produced in Districts 1 to 8, and sold in Market Areas 1 to 14 and 98, has been presented by the Coal Division's witnesses. Dr. Charles Potter of the marketing section, was subject to a lengthy cross-examination on coordination methods, and F. G. Tryon, head of the statistical section, and Charles Hayes, head of the traffic section, gave direct testimony and were briefly cross-examined.

Dr. Potter began his testimony with a general explanation of the method of coordinating prices, and a detailed description of the method of selecting base coals and their coordination for Districts 1 to 8 into a representative destination in each market area. Dr. Potter said that generally the practice in choosing base coals was to select coals that had a large movement to a particular market area and that were typically representative of the coals produced in a certain district, and that properly could be related to coals in other districts.

When cross-examination is completed on Market Areas 1 to 14 and 98, the Division will submit evidence relative to Market Areas 100 to 147, inclusive. These market areas comprise sections of Maryland, Virginia, West Virginia, North Carolina, Kentucky, South Carolina, Georgia, Tennessee, Alabama, and Florida. Market Areas 1 to 14 are roughly made up of Maine, Rhode Island, New Hampshire, Massachusetts, Vermont, Connecticut, New Jersey, New York, Pennsylvania, Delaware, part of Virginia, part of Maryland, District of Columbia, Canada, part of West Virginia and part of Ohio. Market Area 98 covers lake cargoes to ports on Lake Ontario.

The order in which evidence is being received by the board of examiners is as follows: (a) Evidence on behalf of the Coal Division, (b) Producers Boards, (c) Producers protesting prices contained in the schedules, (d) Political subdivisions, (e) Consumers, (f) Other interested parties. The order for cross-examination of the Bituminous Coal Division witnesses is as follows: Individual producers, commencing with producers from District 1; District boards commencing with District 1; political subdivisions; individual consumers and groups of consumers; Consumers' Counsel Division.

## Republic Steel Leases Chateaugay Mine In New York

Announcement was made on July 28 by Republic Steel Corporation of a 25-year lease with the Chateaugay Mining Company for the operation of the Chateaugay mine in northern New York.

Located at Lyon Mountain, N. Y., between Plattsburg and Malone, the mine has been in operation for more than three quarters of a century and has for many years produced approximately 500,000 tons of ore annually. The mine is reported to constitute the finest deposit on the American continent of low phosphorous iron ore.

Because of intermittent operations and lack of outlet for waste gases the blast furnace which is operating in connection with the mines will be closed down and the Chateaugay ore will be converted into iron at Buffalo.

J. R. Linney, vice president of the mining company, will join the Republic organization; Robert Linney will continue in charge of the operation of the mines, and William Linney, who had charge of the Chateaugay blast furnace, will join the Republic blast furnace department in Buffalo where he will supervise the production of pig iron from Chateaugay ore.

Lease of the Chateaugay property follows the corporation's lease of the Port Henry, N. Y., iron mines which was completed a little more than a year ago.

Republic took over operation of the new properties on August 1.

Construction of an iron ore concentration plant to be started immediately in Port Henry, N. Y., is also announced by Republic Steel Corporation. The plant will be used in connection with ore mines operated by the company in the Port Henry district.

The plant will have a capacity of 500,000 tons a year, and is being planned so that it can be expanded if necessary to a million ton annual capacity. The new mill, which replaces an old one, will produce a very high grade ore through use of modern equipment and methods. The plant will be completed in from four to five months.

Planning drive for higher silver prices to producers. Left to right: Gov. E. P. Carville of Nevada; Gov. Henry H. Blood of Utah; Senator Pat McCarran of Nevada, and Gov. Robt. T. Jones of Arizona

## SECOND WESTERN GOVERNORS' SILVER CONFERENCE HELD IN SALT LAKE

A CAMPAIGN to boost the price of silver to the domestic producer up to the full monetary value at which it is now established was mapped out at the second Western Governors' Silver Conference, held in the Hotel Utah on Friday, September 1. In monetary terms, this means that the objective of the conference is the coinage of domestically mined silver at the full rate of $1.29 plus per ounce, minus a small seigniorage charge.

The executive heads of 10 states pledged full cooperation either personally, through representatives, or by message, thus indicating that the Far West, so far as state administrations are concerned, will present a solid front in this effort.

Three of the states—Utah, Nevada and Arizona—were represented by Governors Blood, Carville and Jones, respectively. Six were represented by men appointed by their respective governors, and Governor Clarence D. Martin of Washington sent a telegram pledging his cooperation in whatever program the conference adopted.

Governor Carville, chairman of the conference, called the session to order and reviewed events since the first meeting, last March. He commended congressional representatives from the silver-producing states for their victory in the last session of Congress, and said the Western Governors' Conference proposed to continue the fight for an increased figure. He reported that the recent price increase, and particularly the stabilization by law of the rate at which newly mined silver is to be received by the Mints, had substantially helped his state, both materially and psychologically.

In addition to the governors or their personal representatives who appeared on the program, two United States Senators—Patrick A. McCarran and Key Pittman, both of Nevada—addressed the conference at length, urging continued efforts to improve the position of the western mining industry.

The resolution, unanimously adopted by the conference, follows in full:

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"We, the Governors of the Western States, meeting in conference in Salt Lake City, on September 1, 1939, express gratification at the recent action of Congress in fixing a coinage value for silver and restoring silver to its rightful place in the monetary system of the country.

"We believe that the rate so fixed does not reestablish silver upon the coinage basis to which it is entitled and which the future prosperity of the nation as a whole demands. It does not seem to us just or reasonable that the domestic producer of silver should receive only the equivalent of 55 percent of the monetary value of such silver as fixed by law.

"We favor a policy as will provide that the producer receive the full monetary value of the silver as now established.

"Our agricultural and mineral products are still selling at prices far below normal. While the unemployment situation in our Western States has been alleviated to some extent by recent action of Congress in fixing a price for silver to the producer above that prevailing prior to June 30, 1939, and the burden upon our taxpayers has been relieved to that extent, all our resources for meeting conditions of unemployment and relief are fast being depleted and these continue to be serious problems and challenge our economic recovery.

"The mining of silver is a most important industry in our States. It is important both because of the income from silver as a metal by itself and also as a source of income from the mining of base metals, in which silver is contained. Base metal mining is in a depressed condition because of the world prices now prevailing. In most mines where silver is a by-product, income from this source represents the difference between a profitable and a losing venture. Consequently, the price of silver to the producer continues to be most important to the metal mining industry as a whole.

"Therefore, this conference of western Governors reaffirms its position announced at the former meeting on March 29, 1939, at Reno, Nev., as follows:

"1. We favor a metallic base for United States currency, with the employment of both gold and silver in such base.

"2. We favor continued acquisition by the U. S. Treasury of all newly mined domestic silver tendered to it.

"3. We favor the acquisition by the United States of foreign silver, provided the proceeds of such acquisition shall be used to promote or increase the sale of agricultural and industrial products of the United States in foreign countries.

"And in connection with U. S. Treasury acquisitions of silver, we call attention to the fact that all such acquisitions are settled for through the coinage of silver or the issuance of silver currency and therefore result in no expenditures from the tax revenues or other funds of the U. S. Treasury.

"The prosperity of the mining industry of the West contributes in large measure to the economic welfare of the entire nation."

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## West Virginia Coal Conference, September 28-30

The annual West Virginia Coal Conference, sponsored for several years by West Virginia University through its School of Mines, will be held September 28, 29, and 30, at Morgantown, according to an announcement by President Charles E. Lawall, of the University.

Secretary Ickes, Governor Holt, and Assistant Secretary of War Louis A. Johnson are among those listed in the tentative program as speakers.

The dates are six weeks earlier than last year, when the conference was held in mid-November. A feature of the closing day, September 30, will be the opening game of the football season between West Virginia and West Virginia Wesleyan, at Mountaineer Field.

Truman E. Johnson, of Fairmont, secretary of the Northern West Virginia Coal Association, will preside over the opening session on the morning of September 28. Participants in this program will be President Lawall, W. E. E. Koepler, of Bluefield, secretary of the Pocahontas Coal Operators' Association; James K. Hunt, technical adviser for the advertising department, E. I. duPont de Nemours Company, Wilmington, Del.; and W. A. Koehler, professor of chemical engineering at the university.

The presiding officer at the afternoon session that day will be D. C. Kennedy, of Charleston, secretary of the Kanawha Coal Operators' Association. Speakers will include another duPont representative, T. W. Harris, Jr., general purchasing agent; David B. Reger, consulting geologist of Morgantown; and Dr. Paul H. Price, of Morgantown, state geologist.

Among the subjects scheduled to be taken up on the first day are "Commercializing Education," by Mr. Koepler; "Products From Coal," by Mr. Hunt; "Coal as a Basic Raw Material for the Chemical Industry," by Prof. Koehler; "Importance of Geology to the Future of the Coal Industry," by Mr. Reger; "Use Classification of Coal," by Mr. Harris; and an as yet unassigned subject, "Hydrogenation of Coal."

P. C. Thomas, of Pittsburgh, vice president and manager of mines for the Koppers Coal Company, and John Fielding, Jr., field engineer for the Hanna Coal Company, will conclude the day's program. Mr. Thomas will speak on "New Problems in Preparation and Sizing of Coal," and Mr. Fielding's subject will be "Domestic Consumer Education."

The program September 29 will get under way with a session presided over by John T. Sydnor, general manager of the West Virginia Coal and Coke Company, Omar, W. Va.

James D. Francis, of Huntington, president of the Island Creek Coal Company, will speak on "Coal Industry—Character—Economics;" James Walter Carter, president of the Carter Coal Company, on "Business Man's Need for Coal Research;" W. B. Hughes, manager of the stoker division of the Butler Manufacturing Company, Kansas City, Mo., on "Thermostatic Control of Heating Equipment;" and J. E. Tobey, manager of the fuel engineering division of Appalachian Coals Inc., Cincinnati, Ohio, on "Coal's Importance to the Railroads."

A luncheon at noon that day will be presided over by A. C. Spurr, president of the Monongahela West Penn Public Service Company. Colonel Johnson will be the principal speaker.

The afternoon program of September 29 will be conducted under the direction of Hal M. Scott, of Beckley, secretary of the Winding Gulf Coal Operators' Association.

C. B. Huntress, assistant sales manager of the Republic Coal and Coke Corp., New York, will discuss "Coal, the Permanent Source of Power," and W. A. Buckhannon, of the Appalachian Power Company, Bluefield, "Coal, the Cheapest Source of Power." Other subjects scheduled for this session include "Marketing of Domestic Stokers," "Principles of Combustion," and "Air Conditioning."

Jesse V. Sullivan, of Charleston, secretary of the West Virginia Coal Operators' Association, will serve as toastmaster for the annual banquet, to be held on the evening of September 29. Governor Holt will be the principal speaker.

The conference will be concluded with a session on the morning of September 30, with Harry M. Moses, president of the United States Coal and Coke Corporation, Pittsburgh, presiding. Secretary Ickes is scheduled to speak at this time, with "Fair Trade Practice" as his subject.

## Pennsylvania Safety Meet

Four highly successful safety and first-aid contests were held throughout the bituminous coal regions of Pennsylvania late in July and August, to promote local interest in safety and to choose 36 teams (9 teams from each contest) to represent their respective districts at the state-wide contest sponsored by the Pennsylvania Department of Mines at Ebensburg, Pa., to be held in conjunction with the Cambria County Fair on September 9.

The first district meet was held at Phillipsburg on July 29, with 51 teams competing before some 3,500 spectators. First place was won by the Berwind-White Coal Mining Company, with a percentage of 99.85.

The second was held at Indiana, Pa., on August 5, with 35 mine teams and 10 Boys' Scout teams participating before a crowd of some 7,500 people. First place at this event was won by the Clearfield Bituminous Coal Corporation's Barr Mine team, with a percentage of 99.7.

The third was held at Uniontown, Pa., August 12, with 46 mine teams and 25 Boy and Girl Scout teams taking part. About 3,500 spectators saw first place at this event go to the team from the Melcroft mine of Koppers Coal Company, with a percentage of 99.9. This team won first place at the same meet last year.

The fourth meeting was held at New Kensington, Pa., on August 19. With 19 teams participating before a crowd of about 2,000, first place at this event was won by the team from McCullough mine of the Westmoreland Coal Company, with a percentage of 99.60.

Among the prominent officials conducting the meet were: John Ira Thomas, secretary of mines and sponsor of the meets; Richard Maize, state mine inspector, director, and general chairman; W. H. Filer, state mine inspector; J. J. Forbes, supervising engineer of the safety division of the U. S. Bureau of Mines; and Francis Feehan, mine safety commissioner of the Bureau of Mines.

## Small Type Coal Cleaner Invented

Patent has been secured by Charles E. Pool, Uniontown, Pa., inventor, and production is to be started in the near future on a machine which may find wide application for the small mine, by reclaiming a large percentage of coal now cast on ash and slate dumps.

Mr. Pool has been working on the machine for years, and secured his patent rights less than a year ago, after which he immediately began arrangements for production on a commercial basis.

The machines, which are made to retail at less than $5,000 each, are within reach of the operators of small mines, enabling them to compete in this respect with the largest mines.

The machine operates on the flotation principle, and is adaptable to use with clear water, heavy density chemicals or suspended solids, according to the purpose for which it is to be used.

It can be used to remove nut and larger sizes of coke from coke ash dumps, and in tests has been successful in reclaiming as much as 50 percent of this material, all good domestic fuel which would otherwise go to waste.

## T. C. I. & R. Contract for Central Plant

The Tennessee Coal, Iron and Railroad Company has placed with the Rust Engineering Company a contract covering excavation work and concrete foundations for the central ore conditioning and sintering plant to be erected at the Wenonah Division of the company's Red Mountain ore mines in the Birmingham, Ala., district.

The contract also calls for preparation of roadbeds for railroad tracks to serve the new plant, which will be located near Wenonah Ore Mine No. 7. Approximately 232,000 cubic yards of unclassified excavation will be required to make the site ready for the construction.

The excavation and concrete work will start immediately and is expected to require about six months. The new plant itself is expected to be ready for operation in the late summer or autumn of 1940.

## THOMAS MOSES RETIRES—SUCCEEDED BY J. G. MUNSON

John G. Munson has been elected vice president, raw materials, United States Steel Corporation of Delaware. He succeeds Thomas Moses, who retired on August 18, upon reaching the corporation's retirement age of 70, and who will continue in a consulting capacity. Mr. Munson has been president of Michigan Limestone & Chemical Company since 1928.

THOMAS MOSES

JOHN G. MUNSON

Mr. Moses, the retiring vice president, has been connected with the coal mining industry during his entire business career. He moved to Illinois when 19 years old, beginning at the Kelly No. 1 mine of the Kelly Coal Company in Westville, Ill. In 1905 he was appointed secretary of the Mining Board of the State of Illinois and later served as a mine inspector. In November, 1910, he became superintendent of Bunsen Coal Company (now United States Fuel Company), and in 1915 became general superintendent of United States Fuel Company with headquarters at Danville, Ill. In 1927 he was elected president of H. C. Frick Coke Company, United States Coal and Coke Company, and other coal-producing subsidiaries of United States Steel. He became a vice president of United States Steel Corporation of Delaware January 1, 1938.

Mr. Munson, a graduate of Yale University, served 10 years as superintendent of J. G. White Engineering Corporation and joined United States Steel Corporation subsidiaries as operating manager of Michigan Limestone & Chemical Company in 1919. He was elected vice president of Michigan Limestone & Chemical Company in 1925 and in 1928 became president and a director.

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## Fifth International Conference On Mine Safety Research

Through the efforts of John W. Finch, Director of the Bureau of Mines of the United States Department of the Interior, who extended invitations to directors of experiment stations in the leading coal-producing countries, the Fifth International Conference on Mine Safety Research will be held in the United States at the Central Experiment Station of the Bureau of Mines, Pittsburgh, Pa., September 25 to 30, 1939. Representatives in the field of mine safety research from Great Britain, France, Belgium, Germany and Poland have signified their intention of attending the conference.

A partial list of those who are planning to attend the conference and present papers includes Dr. R. V. Wheeler, Director of Research for the British Safety in Mines Research Board, Sheffield, England, together with his assistant, Dr. F. V. Tideswell; E. Audibert, Director of the Testing Station of the Central Committee of Coal Mine Owners, Montlucon, and M. Blum-Picard, Director of Mines, Paris, France; Adolphe Breyre, Director of the Testing Station of the National Institute of Mines at Paturages, Belgium, together with his assistant, F. van Oudenhove; H. Schultze-Rhonhof, Director of Research at the mining experiment station, Dortmund-Derne, Germany; and M. Stanislaw Herman, Director, and Dr. W. Cybulski, Acting Director, of the Barbara Experimental Coal Mine and Central Experiment Station, Mikolow, Poland.

The Experimental Coal Mine and the Explosives Testing Station of the Bureau of Mines, Department of the Interior, located near Bruceton, Pa., where demonstrations will be given during the meeting of the Fifth International Conference on Mine Safety Research in September 1939

Subjects for discussion at the conference include the following: Explosibility of coal dust and methods of rock-dusting mines; methods of preventing air dustiness in working places; testing of electrical equipment for safety in mines; ignition of gaseous mixtures by explosives; sheathed explosives; testing of Diesel mine locomotives for safety; fundamentals of the combustion of methane; and the design of gas masks and respirators for mining uses.

One day of the conference (September 27) and a subscription dinner in the evening will be devoted to subjects of general interest and will be open to the public. The other meetings will be limited to those taking part in the conference. Several afternoons will be devoted to inspection trips.

The first of the present series of international conferences was held at Buxton, England, in 1931; the second at Montlucon, France, in 1933; the third at Dortmund-Derne, Germany, in 1935; and the fourth at Brussels and Paturages, Belgium, in 1937.

## Pittsburgh Coal Company Scholarships

Recognizing that young men accustomed to mines and mining conditions have the most favorable background from which to profit by technical training to fit them for the coal industry, and knowing of the shortage of young, trained, graduate coal mining engineers, the Pittsburgh Coal Company recently awarded two $300 scholarships to young men in their employ.

The two men selected to receive the scholarships are: Alfred Arnold, age 22, of Elizabeth, Pa., who graduated from McKeesport High School in 1934 and for the last four years has been employed as a loader and mechanic at the Warden mine of the company; and Joseph Fiedorek, age 19, of Oakdale, Pa., who graduated from Oakdale High School in 1937, and for over a year has been employed as a loader at the Montour No. 9 mine of the company.

Forty-three applications were received from eligible candidates. A transcript of high school records were requested in all cases, and each of the eligible candidates who supplied the necessary information by July 15 were interveiwed.

Selections were made by the scholarship committee, consisting of J. B. Morrow, chairman; P. T. Fagan, H. C. Rose, and J. T. Clark. The successful candidates were unanimously chosen by the committee. Selections were based on high school scholarship records and general all-around ability, character and personality. The recipients of the scholarships have complied with the entrance requirements of the Pennsylvania State College.

The scholarship is payable in two installments, one-half upon registration in September and one-half upon registration for the second semester in February. At the end of the first semester, the student's case shall be considered again, and if everything is satisfactory the scholarship shall be continued the second semester. If the first year is satisfactorily completed, the scholarship shall be awarded to the same student for the second year and so on until the course is completed.

These scholarship awards are in line with belief of the officials of the Pittsburgh Coal Company that mechanized coal mining presents new problems in mining, preparation and utilization, and to solve these there must be an increasing number of technically trained officials in the coal industry.


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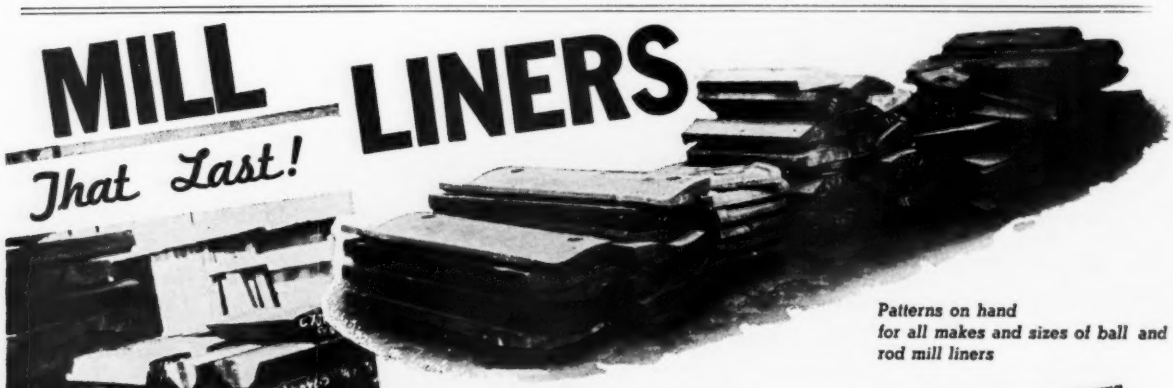

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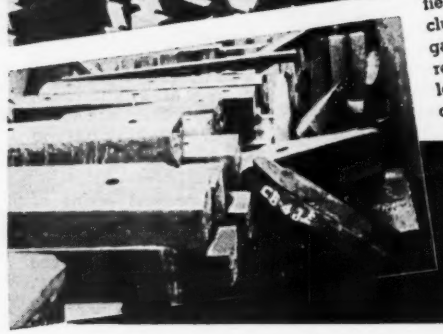

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# PERSONALS

**R. L. Smyth,** for many years with the Logan Coal Company and later with Barnes and Tucker and the Johnstown Coal & Coke Company, has become associated with the eastern division of the Koppers Coal Company. He will maintain offices at the headquarters of that organization at 90 Broad St., New York City.

**Guy N. Bjorge,** general manager of the Homestake Mining Company, was recently awarded an honorary degree of engineering by the South Dakota School of Mines.

**Jean McCallum,** assistant manager of the St. Louis Smelting and Refining Works of the National Lead Company, has been appointed manager of the St. Louis Smelting and Refining Works branch, this action having been taken on July 25 at a meeting of the board of directors of the National Lead Company.

Mr. McCallum succeeds as manager the late James A. Caselton, manager of the Smelting Company and director and vice president of the National Lead Company, who died February 11, 1939.

As manager of the St. Louis Smelting and Refining Works of the parent company, Mr. McCallum will direct the extensive mining interests of the company scattered throughout Missouri, Kansas, Oklahoma, Colorado, Nevada and Utah. Approximately 1,000 men are employed in these mines.

Prior to his appointment as assistant manager of the Smelting Company, Mr. McCallum operated properties at Florence, Colo., and the smelter at Collinsville, Ill. More recently he was superintendent of the St. Louis Lead and Oil Works of National Lead Company, at 5548 Manchester Avenue.

Mr. McCallum went to work for the National Lead Company in 1918, several years after his graduation from the Colorado School of Mines at Golden, Colo.

**G. M. Humphrey,** president of the M. A. Hanna Company; **Howard M. Hanna, Jr.,** chairman of the board; **Joseph Thompson,** vice president; **H. L. Pierce,** secretary; and **R. S. Walker,** consulting engineer, recently visited the Duluth office and Lake Superior iron mining operations of the company. They were met and accompanied on their tour by **Earl E. Hunner,** general manager, and **G. M. Cannon,** assistant general manager.

**F. Witcher McCullough** has been appointed assistant to Vice President **John L. Davin,** of the Chesapeake and Ohio Railway Company. Mr. McCullough was recently secretary of the National Bituminous Coal Commission. His headquarters will be maintained in Huntington.

**D. L. McElroy** has been named director of the school of mines, West Virginia University, at Morgantown, effective September 1. Mr. McElroy comes to his new post from the Virginia Polytechnic Institute, where he was head of the mining engineering department.

**Benjamin F. Fairless,** president of the United States Steel Corporation, headed an inspection party comprised of prominent company officials to the company's iron ranges in Minnesota and Michigan late in July. Included in the party was **Thomas Moses,** vice president, U. S. Steel Corporation of Delaware.

Accompanying the party during their visit to the Vermilion and Mesabi ranges were the following local officials: **Leroy Salsich,** president; **A. Y. Peterson,** vice president; **R. T. Elstad,** assistant to vice president; **E. F. Blu,** general solicitor; **C. J. Hartley,** assistant general solicitor; **F. B. Cronk,** assistant general mining engineer—all of the Oliver Iron Mining Company; and **W. W. J. Croze,** president of the Companhia Meridional de Mineracao, Rio de Janeiro, Brazil.

**Paul L. Shields** has been appointed assistant general manager of the United States Fuel Company at Salt Lake City, Utah, effective August 1.

**A. W. Fahrenwald,** dean of the school of mines, University of Idaho, was in the east for a month immediately preceding his return west to Salt Lake City to address the 6th Annual Metal Mining Convention of the American Mining Congress.

**C. W. Waterman, Jr.,** sales engineer for McNally-Pittsburg Mfg. Corp., formerly stationed at Beckley, W. Va., has returned to the Chicago office.

**John D. MacKenzie,** retiring manager of the East Helena Plant of the American Smelting and Refining Company, was given a testimonial dinner in Bozeman August 19. Mr. MacKenzie will leave for El Paso, Tex., about September 1 to take charge of the El Paso and Hayden, Ariz., smelters of the American Smelting and Refining Company.

The dinner also served as a welcome to **R. D. Bradford,** who succeeds Mr. MacKenzie at East Helena. In the past Mr. Bradford was stationed at El Paso.

**W. A. Colcord** has been appointed general superintendent for the Carbon Fuel Company in West Virginia.

**J. Noble Snider,** vice president of the Consolidation Coal Company, has fully recovered from a severe illness and operation, and is now back on the job.

**J. T. Hill** has been appointed as sales manager of the Sheridan-Wyoming Coal Co., to succeed **Paul L. Shields.**

Mr. Hill has been actively engaged in the coal industry since 1913, being selected by the National Bituminous Coal Commission early in 1938 to represent it as price examiner in the coordination and fixing of prices for all coal produced in the western districts of Wyoming, Utah, Montana, Oregon, Washington and Alaska.

## —*Obituaries*—

**William J. Quigley,** president of the Howe Sound Company, died in New Rochelle, N. Y., July 25, after a year's illness. His age was 67. Mr. Quigley first became associated with the Howe Sound Company over 30 years ago.

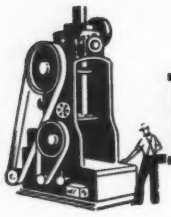
**Fred Hodges,** mill superintendent for the Chino copper mine, Hurley, N. Mex., died June 11 at the age of 60. He was well known in western mining circles, and in late years confined his duties to the Chino mill, one of the largest of the porphyry mills in the Southwest.

**Charles H. Munger,** retired general manager of Pickands, Mather and Company, died July 13 after a lingering illness, at the age of 83.

**Fred W. Braggins,** well-known coal man who was affiliated for many years in responsible executive posts with the Lorain Coal & Dock Co., the Red Jacket Coal Sales Co., and the Hanna Coal Co., died July 30 in Cleveland, Ohio. His age was 67.

**John J. Grimes,** manager of the Explosives Department of the Hercules Powder Company in the Birmingham District, died in Birmingham, Ala., of a heart attack August 1, at the age of 57. Mr. Grimes had been associated with the Hercules Company in Birmingham for the past 22 years and was widely known and esteemed in the coal industry.

**Jedson F. Webb,** chief mining engineer for the Alabama By-Products Corporation, died in Birmingham, Ala., July 26, at the age of 57. Prior to its merger with Alabama By-Products Company, he held the same position with the Park Consolidated Coal Company for many years.



# MANUFACTURERS' Forum

## Conductor Range Increased On Small Strain Clamp

To permit a wider application of its smallest size Hi-Lite strain clamp, the Ohio Brass Company, Mansfield, Ohio, has redesigned the clamp to increase the range of conductors accommodated. With the new design this clamp without liners will take 0.20 to 0.55-inch conductors. This range includes copper conductors from No. 4 solid to 4/0 stranded. The clamp with liners will take conductors from No. 4 A.C.S.R. to 2/0 A.C.S.R.

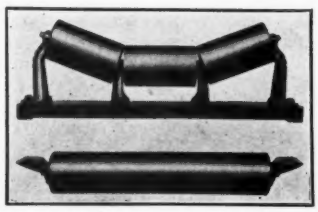
The redesigned clamp is equipped with three U-bolts and the active clamping section is approximately 7¾ inches long, providing greater holding

power and easier carriage of the cable. The radius of curvature at the entrance to the clamp is 3¾ inches, resulting in less stress in the cable at the critical section and less likelihood of damage as a result of vibration. The small Hi-Lite is furnished with a loop at the mouth of the clamp to which tackle used in pulling a conductor to final sag may be attached. This feature permits installation of the clamp in its working position. It also eliminates the necessity of measuring insulators and cable and then making allowances for take-up of slack, both of which are a nuisance when stringing wire.

## Troughing and Return Idlers

Improved roller bearing troughing and return idlers covered by patents issued and pending, which are new in design and improved in many details, according to the manufacturer, the Robins Conveying Belt Co., New York, N. Y.

The malleable iron supporting brackets are of streamlined design and crescent section, giving maximum strength and pleasing appearance. The new triple seal assembly which prevents escape of grease or the entrance of grit or moisture is unique, and under the most severe tests has proven to be superior to all former



idler grease seals. These seals are used in both the troughing and return idlers, as also is the Robins patented, single-shot lubricating system, whereby all bearings are completely lubricated by one application of a grease gun on either one of the two end fittings.

The troughing idler shaft and pulley assembly may be completely dismantled and reassembled without the use of tools. The return idler shaft and pulley assembly may be lifted out between the conveyor stringers for inspection or adjustment and may be easily replaced without disturbing the bracket connections.

Many other valuable advantages are found in the design and construction of both the troughing and return idlers, all combining to give economy of operation, reduced maintenance cost, and longer life.

## New Artificial Respiration Trainer

The M.S.A. Artificial Respiration Trainer, which is illustrated and described in a recent bulletin of this well-known safety equipment manufacturer, is something completely new in the field of artificial respiration training. Designed to accurately record the work of each man learning the technique of manual resuscitation, the instrument indicates on a chart the actual performance of the operator — graphically recording the pressure applied at each forward stroke, the volume of air expelled by the patient's lungs, and timing and rhythm.

Thus, by the use of this new apparatus, it is claimed that the progress of the student can be measured and observed, and the effectiveness of his work demonstrated in permanent form. For men who are already trained, the apparatus provides a valuable check on proficiency; with the Trainer turned so that the operator cannot observe the chart, any errors in technique that may have crept into his application are plainly apparent as the record is made.

From the safety standpoint, this device has great importance in preventing any tendency of the operator to unknowingly apply too great a pressure on the patient, it is stated.

With the M.S.A. Artificial Respiration Trainer, teacher and student alike can witness the progress made in reaching the goal of ideal efficiency in this vital work, which results in quicker learning, easier teaching, higher skill, and new interest in training. The instrument itself is simple to operate, is assembled complete in a strong case measuring 15 x 19 x 16, and is readily portable. Bulletin No. CA-6 may be obtained by writing to this publication or direct to the manufacturer, Mine Safety Appliances Company, Braddock, Thomas and Meade Streets, Pittsburgh, Pa.

## Welding and Heating Blowpipe

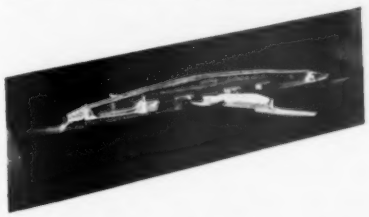
Literally hundreds of such metal-working operations as forging, forming, straightening, bending, and pressing can be effectively and economically performed with the aid of the intense, localized heat of the oxy-acetylene flame. Of late, the usefulness of the oxy-acetylene flame for these "smithing" operations has been greatly increased by the availability of the large-capacity heating blowpipe. This blowpipe, distributed by The Linde Air Products Company and known as the Oxweld (Type W-26) Heavy-Duty Welding Blowpipe, is for welding and heating ranges above those which can be handled by the

ordinary blowpipes. It delivers a tremendous amount of heat to a localized area, and does this so quickly that metal-working and heat-treating can be accomplished at top speed.

Extensions for the welding head are available for extra-heavy work, doing away with the necessity for heat shields. The operator works in comfort, away from the source of heat, and finds the blowpipe, even with the extension, easy to handle because of its excellent balance.

## New Trolley Crossover

Lighter, shorter, and presenting a more pleasing appearance than the former design, a new adjustable insulated trolley crossover is announced by the Westinghouse Electric & Manufacturing Company. Instead of a wooden beam, the new crossing has a solid metal backplate, superior in that it will not deteriorate because of weather or strain. An insulation of wood is used to separate the wires.



One wire runs over the top of the metal plate, which takes up the stress.

In segregating one positive potential from another, the potential between the two wires is seldom above 75 volts. The crossover is only used to insulate one trolley line crossing another, and cannot be used as a section insulator in one common line.

The complete under-run is removable without taking the entire crossover from the line. The length overall, 43 inches, is considerably shorter than used prior to this time. The adjustable metallic member has a range from 30 to 90 degrees.

## Rubber Trolley Wire Guard

A recent development that has proven itself important for safety in mines is Condor Rubber Trolley Wire Guard, manufactured by The Manhattan Rubber Mfg. Division, Passaic, N. J. Being designed to eliminate the possibility of mine workers being severely burned or electrocuted by coming in direct contact with the live trolley wire, the guard will prevent serious accidents when properly installed. It has the approval of mine inspectors in several states. A patent on its design has been granted.

The guard is so formed that when installed it assumes a natural shape that gives protection from the trolley wire when it is struck from either side. Unlike the old-fashioned wooden guard, it is flexible and is not knocked down when the trolley pole jumps the wire or will not cause injuries when accidentally struck by workers. Rubber guard is also an insulator, while the wooden guard becomes soaked with water and is then a conductor of electricity. The rubber guard has a low cost of installation as it requires no special hangers and can be accomplished by one man. Board insulation is usually creosoted and must be hung with special costly hangers. The rubber guard has a longer ultimate life.

Condor Guard has a distinctive red color that acts as a natural sign of danger.

## Preparation Equipment Contracts Closed by Roberts and Schaefer

The following contracts have recently been closed by the Roberts and Schaefer Company, Chicago, Ill.:

Complete Hydro Separator coal washing equipment, to be erected at their mine at Jackson Center, Pa., by **Walter S. Rae of Pittsburgh, Pa.**, capacity 100 tons per hour of 4" x ¼" coal, to be completed September 15, 1939.

**Heisley Coal Company, Nanty-Glo, Pa.**, for the installation of Pangborn dust collection equipment and structure, capacity 45 tons, construction to be completed October 1, 1939.

**Rochester and Pittsburgh Coal Company, Indiana, Pa.**, for the complete design and erection supervision of their new tipple and preparation plant at Waterman Mine No. 2, Homer City, Pa. Tipple capacity 250 tons per hour of run-of-mine coal. Cleaner capacity for one-half tonnage will be built now, balance later. Coal to be cleaned—¾" x 0 at 125 tons per hour. Sizes to be made—¾" x ⅜" and ⅜" x 0". Completion date December 15, 1939. Roberts and Schaefer Company's revolving dump and feeder and stump air-flow units will be installed.

**H. E. Harman Coal Corp., Harman, Va.**, for complete Hydro Separator coal washing equipment and structure; capacity 225 tons per hour of 3" x ½" coal. Sizes prepared will be 3" x 1¼", 1¼" x ¾" and ¾" x ½". Completion date, December 15, 1939.

# CATALOGS AND BULLETINS

• CIRCUIT BREAKERS. *Westinghouse Elec. & Mfg. Co.*, East Pittsburgh, Pa. Descriptive Data 33-745 describes company's outdoor oil circuit breakers for frame work or pole mounting, manually or electrically operated. Faster breaker operation, shorter arcing time, De-ion arc control and positive shaft operation between pole units are among the distinctive characteristics of these breakers. 8 pages.

• COMPRESSORS. *Ingersoll-Rand Co.*, Phillipsburg, N. J. Form 2437 presents company's Type 20 vertical, stationary, two-stage, high-pressure air compressors for starting internal combustion engine. 2 pages.

Form 3426 describes company's large "four corner" direct-connected synchronous-motor-driven compressor. 12 pages.

• LIGHTNING PROTECTION. *Ohio Brass Co.*, Mansfield, Ohio. Bulletin 680-H on lightning protection at lightning speed with company's control gaps, discusses problem of protecting stations from lightning, explains how the control gaps work, points out where they can be installed to best advantage, and gives complete catalog information. 8 pages.

• LOADING EQUIPMENT. *The Jeffrey Mfg. Co.*, Columbus, Ohio. Bulletin 704 on company's new type 61-CL loader for conveyor mining. 4 pages.

• MAGNET WIRE. *Anaconda Wire and Cable Co.*, 25 Broadway, New York City. Publication C352 (second edition) is a new and considerably revised edition of company's magnet wire catalog, presenting a mass of valuable data concerning electrical and physical properties of magnet wire and various applications, with much more space devoted to the use of magnet wire coils. Also available is a small-size pocket handbook containing all technical tables of information to the shopman and engineer. Animated figures pep up illustrations showing various uses of the wires and coils. Main catalog, 92 pages. Handbook, 40 pages.

• POWER TRANSMISSION. *Link-Belt Co.*, 307 North Michigan Avenue, Chicago, Ill. Book 1600 is the new handbook of modern power transmission units, containing complete design and application data, dimensions, weights and list prices, cross indexed for the convenient use of design engineers and plant managers. 272 pages.

• PUMPS. *Worthington Pump & Machinery Corp.*, Harrison, N. J. Bulletin W-321-M3A on company's Jetflo deep-well pumps. 6 pages.

• RESPIRATORS. *Mine Safety Appliances Co.*, Pittsburgh, Pa. Bulletin CM-3 on the new and improved Dustfoe respirator. 2 pages.

• SCREENS. *Allis-Chalmers Mfg. Co.*, Milwaukee, Wis. Leaflet 2361 illustrates and describes operation of company's new Sta-Kleen vibrating screen. 4 pages.

*Robins Conveying Belt Co.*, 15 Park Row, New York City. Bulletin 105 describes company's Style H and Style J Vibrex screens. 12 pages.

*The W. S. Tyler Co.*, Cleveland, Ohio. Bulletin 908 on new developments in wet screening describes company's Hum-mer and Tyler-Niagara screening methods. 12 pages.

• SHEAVE BLOCKS. *Alloy Steel & Metals Co.*, 1862 E. 55th St., Los Angeles, Calif. Form 92 describes and illustrates the three Pacific types of Super Duty, Hevi Duty and Standard Duty sheave blocks for mine slushing operations. 4 pages.

• SLUSHING SCRAPERS. *Alloy Steel & Metals Co.*, 1862 E. 55th St., Los Angeles, Calif. Form 93 features company's new line of all-manganese steel scrapers for mine slushing and underground service. 4 pages.

• SWITCHGEAR. *Allis-Chalmers Mfg. Co.*, Milwaukee, Wis. Bulletin B-6011 is an enlarged and revised issue of the company's indoor cubicle-type switchgear, containing new installation views, dimension sheets and wearing diagrams, as well as application and construction data. 12 pages.

Bulletin B-6012 describes company's latest complete line of vertical-life, metal-clad switchgear for control of generators, motors, incoming lines, feeders, bus tie circuits, etc. 12 pages.

*I-T-E Circuit Breaker Co.*, Philadelphia, Pa. Bulletin 3904 on company's load distributor for motor-generator sets developed to improve service from one or more mining motor-generator sets operating in parallel in the same trolley and feeder systems but at widely separated locations. 4 pages.

• WASHROOM EQUIPMENT. *Bradley Washfountain Co.*, West Michigan Street, Milwaukee, Wis. Booklet presents 10 representative washroom layouts selected from company's drawing files, together with helpful facts pertaining to fixture capacities and clearances. 12 pages.

Bulletin 233-25M presents important developments in the group washing field, including four new washfountains, treadle-operated showers, shower receptors, redesigned bubbler heads, etc. 4 pages.

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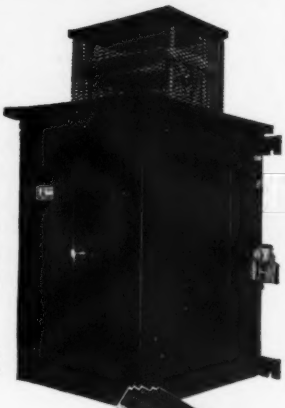
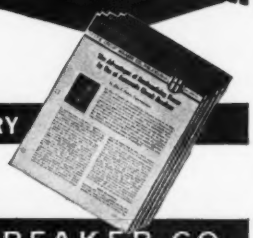


At right—Each circuit breaker controls a section, confining disturbances to the area in which they arise.

*Representatives in Principal Mining Areas*



BULLETINS TELL THE STORY

These bulletins deal with a variety of mining conditions. Copies will be gladly furnished on request.

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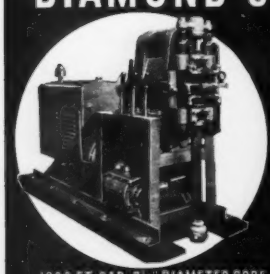

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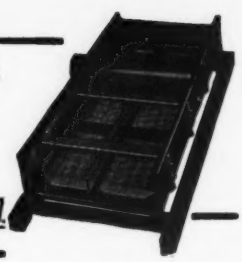

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Unit radial pressure... $P = \frac{2T}{Dd}$ Where T = Tension in pounds
D = Tread diameter of sheave or drum, inches
d = Diameter of rope, inches

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